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Carbonizing So As to Insure a Tough Core

A New Method Contrasted with One
Regarded as Standard Present Prac-
tice—Advantages of the Former

BY EARL W. PIERCE* AND JOHN W. ANDERSON*

THE following article deals with the carbonizing of straight low carbon steel with a carbon content varying from 0.15 to 0.25 per cent as a means of producing material with a satisfactorily hardened case without sacrificing the quality of toughness in the core.

Carbonizing, in the regular way, as adopted by the majority of heat treaters, is supposed to produce a tough core; but does it? The usual method for carbonizing steel of this character and the subsequent procedure for case hardening is as follows: Carbonizing heat of 1700 to 1800 deg. Fahr. with a general average 1750 deg. Fahr.; the length of time for carbonizing depending on depth of case desired, also on the physical properties required of the part for which it is to be used. The first hardening heat or core refining heat is around 1600 deg. Fahr., followed by the second or case refining heat of 1400 deg. Fahr. This treatment is usually followed by a low tempering heat of 350 deg. Fahr. to relieve excessive strains due to hardening.

The object, of course, of the above treatment is to produce material with a hard wearing surface or case with a tough core. The hard case is produced very satisfactorily but at the expense of the core. The hardening heats may be carried out in an open furnace or may be made from a lead bath. In either case the part in question receives a rapid hardening operation, which is necessary for three causes. First, a rapid heat is necessary for the core refining in order that decarbonization may not take place in the case and to prevent excessive scaling. Second, the case refining heat must be as rapid as possible and yet produce a product well hardened and free from soft spots, and at a temperature which will insure a fine grained structure. It is obvious that if the furnace temperature exceeds the critical point of the case and is allowed to remain at that temperature, a crystalline growth takes place in the case which may later be the cause of flaking and the peeling off of the case. Third, high speed production requirements demand short and rapid heats.

It is therefore necessary to prescribe a treatment that will not sacrifice the quality of toughness in the core. The secret of this treatment lies in the necessity of keeping the carbonizing temperature as near the first hardening heat as possible or vice versa. The method requires a lowering of the carbonizing temperature, close to the core refining heat, as it would not be practical to raise the hardening heat to the carbon-

izing temperature without danger of ruining the part. This method makes a longer carbonizing time necessary to produce the necessary depth of case, but this increased time is made up in the subsequent hardening heats which will respond to the rapid heats, with the desired physical qualities.

This method of treatment is explained as follows: In carbonizing at an average temperature of 1750 deg. Fahr., the steel is held at a point which permits of rapid and deep penetration of the carbon, which is the only advantage of a high temperature. This high temperature at the same time permits a growth of the crystalline structure, as it is then considerably above the upper critical point. As it is held for several hours at this high temperature, the grain growth is established to such an extent that it is not recovered by the comparatively short duration of the high or core-refining heat. The result of such treatment is that the coarse grain structure established in carbonizing has not been overcome in the hardening operation and a coarse crystalline structure is noted in the fractured part after hardening. As pointed out above, the high hardening heat can not be maintained at a sufficiently high temperature, nor for a sufficient length of time, to refine the grain produced at the carbonizing heat of 1750 deg. Fahr. It follows then that the quality of the core has been lost and the quality of toughness has been neglected.

By lowering the carbonizing temperature to that of the core-refining heat, namely to 1600 deg. Fahr., it is obvious that the grain structure developed in carbonizing is perpetuated in the following heat treatment. In this case the carbonizing is carried on well within the carbonizing zone to permit of sufficient case, in depth as well as carbon content, and at the same time at a temperature approximating the upper critical range of the steel, and insuring as fine a grain as practical and possible.

When the work has become heated through at this temperature, it is quenched and the fine structure formerly produced in the carbonizing operation is trapped. It is well to hold the heat at the hardening temperature a few minutes to recover any crystalline growth which may have occurred in cooling after carbonizing, between that temperature and the upper critical point for this kind of steel, which is about 1550 deg. Fahr. This further allows for the full absorption and diffusion of excess ferrite. A tough core is thus insured and the remaining low heat for case refining and hardening can be carried out with satisfactory results.

A further advantage of this method comes in the

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ease with which the work, distorted to some extent in hardening, can be straightened with practically no

breakage loss nor cracking of the case hardened surface.

Refractories for Bottom Connected Electric Furnaces

How to Apply the Electric Current—Rôle of Dolomite, Magnesite and Tar—Burning In the Bottom

BY FRANK W. BROOKE*

A GOOD deal of misunderstanding exists among electric furnace users concerning refractory linings of bottom connected electric furnaces. There is no mystery attached to this, and the only points essential to success for furnaces thus connected are:

- Correct application of electric current.
- Good commercial double burnt dolomite.
- Good commercial magnesite.
- Good commercial pitch or tar.
- Good furnace operators.

Proper Application of the Electric Current

As this article is written only for furnaces where the bottom is a true metallurgical hearth, no reference will be made to those furnaces where metallic studs or water-cooled steel plugs are inserted and carried through the hearth, as in the case of such furnaces as the single-phase Snyder furnace or the Girod furnace.

There are furnaces on the market which claim to have conductive bottoms, which they undoubtedly have, but this electrical equipment is such that only out-of-phase currents are applied to the bottom, and these same furnaces claim to have at least a working balanced load on the three phases, otherwise they would be a serious drawback to the power company. This places such a furnace in an embarrassing position. If it maintains a reasonable balance, its conductive bottom is of no use, and if there is sufficient current applied at the bottom to be of any commercial value to the steel in the hearth, then there will be such an unbalancing of the load as to cause serious trouble with the power company.

A conductive bottom, in fact, only becomes valuable when, as in the case of the Greaves-Etchells furnace, one of the three transformers is connected directly to the bottom, and when this transformer is itself so designed that it will carry a heavy current, a current even higher than that carried by each of the electrodes. This further necessitates the bottom transformer having a kilowatt-ampere capacity and a secondary voltage so designed that when the top electrodes carry equal currents there is a perfect balance on the primary side. In a furnace having such features, there is no fear of the bottom's being able to carry all the current given to it, neither is there any fear that even the deep holes which form during melting practice of any furnace will cause any electrical trouble.

The bottom heat in this type of furnace, where one of the three phases is attached to the whole of the furnace hearth, is generated by the resistance the top layer of refractory lining offers to the natural flow of current. This top surface layer, being in contact with the steel charge, gives up its heat as rapidly as it is formed to the colder charge. The effect of the currents flowing through such a refractory lining seems to prolong the life of the lining, and in a large number of cases, where proper care is taken, linings have been in constant operation for thousands of heats. This may in a measure be due to the fact that the bottom heat causes the charge to come clean without sculling and contamination.

Good Commercial Dolomite and Tar

We have always had better results from the natural dolomite crushed to a uniform size of about pea size, or a little larger, which has been given a real double

burning. The failure of so many dolomites during war period was undoubtedly the rushing practice adopted (to meet the sudden demand) in grading the size, but more particularly in the double burning and the lack of uniformity, probably more than anything else, introduced the many built-up dolomites now on the market.

While Austrian magnesite is still the best, we have had excellent results from the materials supplied to our customers by two of the largest producers of domestic magnesite.

Many fancy specifications have been written for the correct type of tar supposed to be essential to give conductivity to a bottom. It has been our experience that a good pitch is all that is necessary, and our interpretation of a good pitch is the residue from coal-tar distillation up to about 250 deg. C. A good coal-tar roofing pitch usually fulfills this specification. A point which, however, is very essential to the quick "coming-on" of the conductivity is to design the furnace and put in the bottom in such a way that all the excess tar will freely and quickly drain away. We have known furnaces where this feature was neglected and the bottom in starting up remained non-conductive for 6 to 10 heats, and when the proper attention was given the tar would drain away, or its products burn away and the current would at once come on to the bottom, attaining full current in less than an hour.

Furnace Operator

A number of operators have developed their own methods of burning in a bottom and sometimes their own ideas, which may be very excellent on an open-hearth, will not suit this type of furnace. All that is required is to follow the simple methods required in the stamping-in of any tar bottom, use the materials specified and to keep out any other special stunts.

Sintering in a bottom in layers by means of the electrodes playing on carbon is not correct for conductive bottoms and, even for other electric furnaces, has many serious objections. It is easier and probably more pleasant, but the danger of forming thin films of reduced refractory or thin films of dust or dirt is great, and will only cause flaking later on. Every part of a rammed-in bottom can be watched for uniformity and cleanliness, and it is only slackness or departure from details that causes failures.

To Promote Freight Movement

The Lakewood Engineering Co., Cleveland, is starting a campaign, the idea of which might be applied to many lines of industry, for the transporting to and storing of road building materials at the point of consumption during the fall, winter and early spring months. It is pointed out that a great deal of relief would thereby be afforded to the railroads in the movement of open-top cars during the summer months, which are always a peak load season for the railroads. Letters are being addressed to bankers, business men, contractors, railroad general freight agents, chief executives, state and county engineers and chambers of commerce, urging such procedure.

Because of unsettled conditions in the iron and steel trade the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., has temporarily suspended 400 employees, the greater part of the plant's working force.

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Keen Interest in Tax Revision Plans

Congressional Leaders Considering What Will Be Substituted for Excess Profits Tax—Revision of the Tariff Will Be Important Feature of Legislation

— BY OSWALD F. SCHUETTE —

WASHINGTON, Nov. 16.—Next year's Federal taxes will go a long way toward determining profits in 1921. Congress is setting up the machinery to determine next year's taxes. Is it any wonder that every industry—big and little, steel and otherwise—is vitally interested in the congressional plans? Comment by the slowly gathering clans of the present Congress only emphasizes the wide divergence of opinion among the Republican leaders. On one thing they are agreed—the excess profits tax must go. But—and it is still a large “but”—what will take its place? For the excess profits tax is scheduled to yield the modest little amount of \$1,300,000,000 in the present year. As taxes go, this is a sizable sum. During the last fiscal year all the special Government taxes, outside the income and profits taxes, totaled only \$1,450,000,000. Taxes on transportation and industries brought \$308,000,000; on tobacco, \$295,000,000; manufacturers' excise tax, \$268,000,000; the tax on all kinds of beverages, \$197,000,000; the corporation capital stock and other special taxes netted \$105,000,000; estate taxes, \$104,000,000; stamp taxes on documents, \$84,000,000; and taxes on admissions and dues, \$82,000,000. So it is easy to see that the task of finding a new tax that will produce the \$1,300,000,000 estimate excess profits tax is a large and statesmanlike undertaking.

This is why the congressional leaders are so slow in promulgating a definite program. They are pledged to abandon the excess profits tax, but they are unwilling to carry out that pledge until they can find another way of circumventing the inevitable deficit.

Proposed Tariff Revision

The situation is complicated by the fact that the tariff revision which is to be one of the first tasks of the Sixty-seventh Congress may take months of study and work. Until the tariff has been revised, it will be impossible to estimate the probable customs receipts of the Government. They are expected to take care of a considerable share of the deficit to result from the repeal of the excess profits tax. The most feasible suggestion that has been made by way of a program for tax revision places the repeal of the excess profits tax at the head of the list. Under this schedule the first act of the special session of the Sixty-seventh Congress in April, if it is called then, will be the formal repeal of the excess profits tax. This would enable the industries of the country to keep their books—and their prices—accordingly. It would give to these industries the notice to which they are entitled of the actual taxes they will have to pay at the end of the year.

The second act on this program would be the framing of the tariff law. When that has been determined so that the congressional leaders will know just what further taxes are necessary to keep the Treasury afloat, they will be able to itemize the details of further Federal taxation.

Will Consult Business Organizations

Contrary to the policy pursued by the present administration, the Republican leaders in Congress are planning to ask the advice of the industrial and business organizations of the country on this whole program of Federal taxation. The Chamber of Commerce of the United States and the American Bankers' Association have already arranged to sound their members on these problems. The tax committee of the National Industrial Conference Board has also made recommendations. Other national organizations will probably be heard from, particularly when the public hearings of the ways and means committee of the House and the finance committee of the Senate are begun.

These hearings will be held on the general problem of domestic taxation as well as upon the tariff. On the latter question the experts of the ways and means committee have compiled their “Summary of Tax Information” which is to be the basis of the Fordney bill. This document covers 1004 pages of elaborate detail of the Aldrich-Payne and Underwood-Simmons tariff laws. The corresponding paragraphs of these acts are printed in parallel columns with a statement of production, import and export figures, as well as a description of the articles involved and their varied uses. This document will form the basis for the proposed tariff legislation, and it is important that all representatives of industry who are planning to testify before the committee should study it before they present their own views. The document, however, has so far been printed in a limited edition for the committee's use. As a companion volume “The Statistics of Imports and Duties” has been printed, but both volumes cover statistics only down to June 30, 1918. Efforts are now being made by the committee experts to obtain the import statistics for the fiscal years of 1919 and 1920. It is expected that they will be ready by the time the new Congress meets in April.

Special Tariff Acts

There is still a likelihood that the special tariff acts pending in Congress to levy special duties on manganese, tungsten and similar imports will receive attention during the short winter session. An effort, however, is being made to revive interest in anti-dumping legislation. The Senate finance committee has before it a bill passed by the House of Representatives to stop foreign “dumping,” and a Senate substitute has been prepared. Both the bills seek to impose a special duty upon wares imported into the United States at less than their foreign selling value. The high tariff leaders of the House and Senate claim that unless such a bill is passed, foreign exporters will flood the American market with their wares in anticipation of the passage of a high tariff bill next summer. For that reason they will attempt to induce the two houses to agree upon an anti-dumping bill at the winter session.

Republican leaders in both houses have not been able to agree in their views on the sales tax as a substitute for the excess profits tax. Because a 1 per cent tax on all sales would easily net \$3,000,000,000 a year, it is believed that such a tax would win considerable favor in both houses. Representative Fess of Ohio has announced that he favors the sales tax. Representative McFadden of Pennsylvania, the new chairman of the committee on banking and currency, opposes the tax and suggests as an offset that Government plans to pay off \$3,000,000,000 in floating indebtedness and \$5,000,000,000 of Victory notes due in 1923 be postponed for 15 years.

Cutting Appropriations

In the meantime the downward revision of Government appropriations is also under way. That is one way of helping to lighten the tax burdens of the country. The special subcommittee of the House Appropriations Committee begins work on the legislative, executive and judicial appropriation bill this week. Its chief task will be to prune departmental estimates for the fiscal year ending June 30, 1922. Last year the Congressional committees cut \$1,500,000,000 from the Government estimates. The revised estimates for the various departments are not yet available, but the appropriations committee leaders in both houses promise that they will cut as deeply as possible into the estimates of the department heads.

American Rolling Mill Furnaces Remodeled

East and West Units Entirely Reconstructed and Reset and Volume Increased
—Hot Stoves Raised and Re-equipped

A NUMBER of improvements recently made in the two Columbus furnaces of the American Rolling Mill Co., including increases in the volumetric sizes of both the West and East furnaces, as they are called, and the entire remodeling of the hot stoves, have brought about record production totals at these furnaces. In the installation of the changes many problems, of course, presented themselves, and the manner in which they were attacked, particularly that of jacking up the furnace and stoves to put in new foundations and resetting the furnace shells, deserves particular mention.

Reconstruction was begun May 15, 1919, at West furnace after the lining was removed and top dismantled. On this furnace, the entire bosh, tuyere breast and hearth steel work was removed and an 11-ft. salamander blasted and removed. The furnace shell and mantle were supported by means of two heavy bridge girders carried on blocking, and base plates and columns removed. The old column base brick ring was entirely removed down to the concrete foundation. A new reinforced concrete foundation was then set in place, base plate ring set, and columns renewed. Simultaneously the mantle was leveled and the furnace jacked into level and center by means of two cribbed-up bridge girders. The new columns were hung from the mantle and the base plates were grouted in correct location and elevation beneath the columns, thus establishing the furnace shell perpendicular on center line dropped from skip hoist head and with the mantle level at the right elevation. In doing this work the furnace shell had to be cut loose from the downcomer and skip incline to insure getting it back into correct level and location. The bottom six rings of shell were reinforced on all vertical seams with butt straps and there were several sheets renewed.

In redesigning the lines of the furnace, the height was held at 75 ft., but the volumetric capacity was materially increased. The angle of the bosh was also steepened and the height of the bosh lowered; the inwall batter was increased and in general the lines of the furnace were considerably changed. A new steel tuyere breast and a new hearth jacket were put in place and a strongly reinforced bosh was built. Stock line protection was afforded by the use of cast iron wearing plates of special analysis. The top was left with the existing single offtake and minor alterations. The major alterations consisted in the incorporation of means of adjustment of the location of both bell levers so as to maintain the bells centered in furnace, and the provision of bell beam heads and bell rod hangers to insure parallel motion of the bell rods in lowering and closing the bells. The small bell lever was relocated. The McKee revolving distributor, which was one of the earliest designs, was rebuilt to afford a straight neck and to conform more closely to the present design. Minor alterations were made in the dumping cylinders and links.

The East furnace was blown out on Nov. 15, 1919, and dismantling started on Nov. 16. The furnace was rebuilt with exactly the same lines as the West furnace, and the details of reconstruction were the same below the mantle as at the West furnace. An entirely new shell, including mantle, was designed and installed. In removing the lining the old shell had to be independently supported to keep the weight of skip, downcomer and shell itself from telescoping the old shell. The new shell installation afforded the opportunity for the incorporation of a dome top with double uptakes. These uptakes were provided with Baer explosion valves, and from the uptakes, downtakes were led to a single downcomer of a standpipe type, which in turn discharged into the existing dust catcher. The East furnace was

provided with a Brassert stationary double bell type top, the bell operating mechanism was remodeled to get the steam cylinders off the top of the furnace; a new top platform was provided and movable bell beam features with new heads incorporated. A new bustle pipe was installed together with circle pipe, trough, goose-necks and penstocks.

The hot blast stoves, eight in number, were entirely remodeled. Except for the chimney valves, the stoves were completely equipped with new trimmings, inclusive of hot blast valves, gas burners and additional top cleaning doors. The entire stove linings were removed.

To obtain increased hot blast stove capacity it was decided to increase the height of the old stove shells and to install new linings. With the exception of certain bottom rings on some stoves, the shells were in good shape. This work, similar to the task of resetting the furnace shells, required most exacting care, thorough preparation of work plans, and special appliances designed and built by the Mt. Vernon Bridge Co. The manner of handling the work consisted in bolting four cast steel saddles onto the second course of the stove. These saddles were bolted to a built-up girder frame square, enclosing the stove. This girder or frame was hung from four cross-braced steel columns by means of 40-ton chain blocks, one at each corner. The stove shell being in this manner supported, the bottom course was removed.

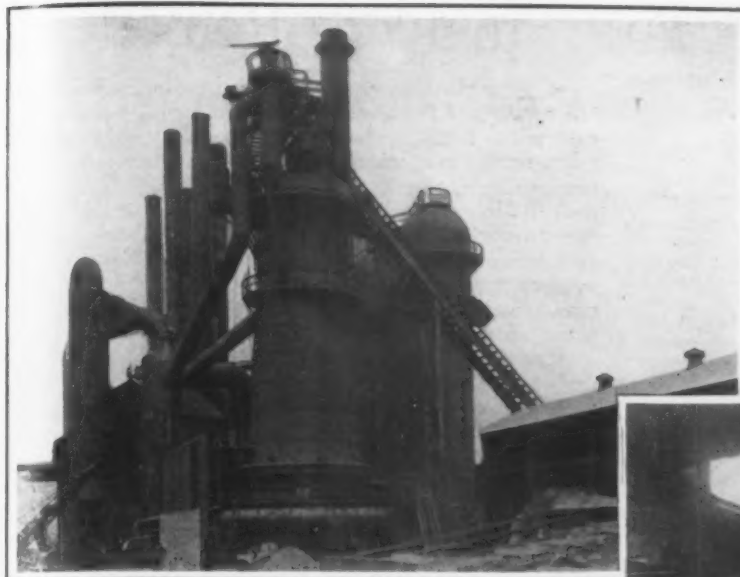
The stove bottoms were raised and re-grouted, repairs and reinforcements being made when required. A new bottom ring was then riveted to the re-set and reinforced stove bottom. The shell was then jacked up and additional new rings were in sequence riveted into place and the stove shell riveted to the new 15-ft. built-up courses, making a 90x18-ft. stove. A new reinforcing band was placed at the top of the stove shell behind the dome skew-back immediately beneath the dome.

The new linings are of the Brassert-Jones side combustion design. The checkers have 6-in. openings and 2½ in. thick checker brick; all names and marks were left off the checker brick so as to lessen the crevices for lodgement of dirt. The firebrick for all eight stoves were furnished by the Ashland Fire Brick Co., Ashland, Ky. The brick for both furnace linings were from the Olive Hill (Kentucky) Works of the Harbison-Walker Refractories Co. A total of 33,000 ft. heating surface is afforded per stove. The stove shells were insulated with Sil-O-Cel powder and brick. Provision is made for blowing the checkers with compressed air.

The old underground gas mains were filled in and an entirely new overhead gas system installed. Starting at the original dust catcher, there was placed a water seal valve, then a 12 ft. 6 in. and a 10 ft. 6 in. Brassert whirler in series. These delivered gas to both boilers and stoves through the new gas main, provided with V dust pockets and goggle valves. At the boilers the main connects with the burners by positive shut-off valves used in conjunction with regulating valves. Butterfly regulating valves are provided at the stove burners. The cold blast main was entirely renewed beyond the snort valve, new by-pass installed, and the hot blast main was thoroughly gone over and repaired, the relief valves being removed.

A new 600-hp. Rust boiler was installed, together with new stack, and the steam pressure was raised to 150 lb. gage. Both cast houses were rebuilt with steep roofs and changes made at the pig casting machines.

The reconstruction work on the West furnace, from blowing-out to blowing-in, lasted from May 15, 1919, to Dec. 29, 1919; and on the East furnace, from



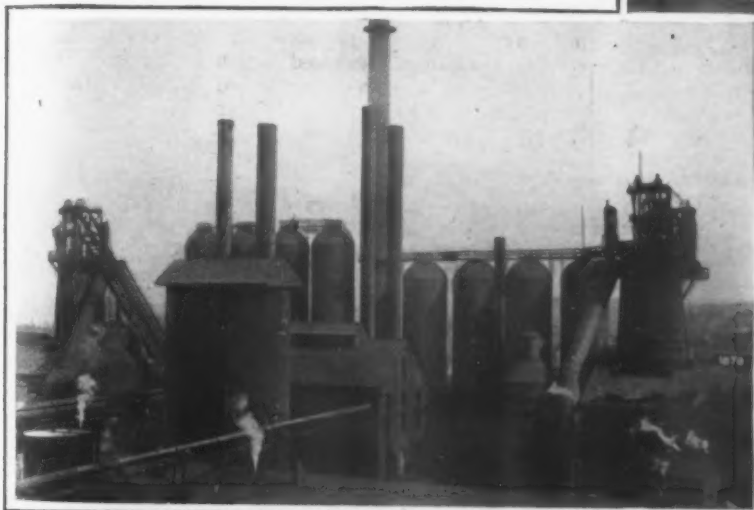
East Furnace Shell Erected, Showing Dome Top, Double Uptakes and Gas Cleaning System

Remodeled Furnaces and Stoves at American Rolling Mill Co. Plant

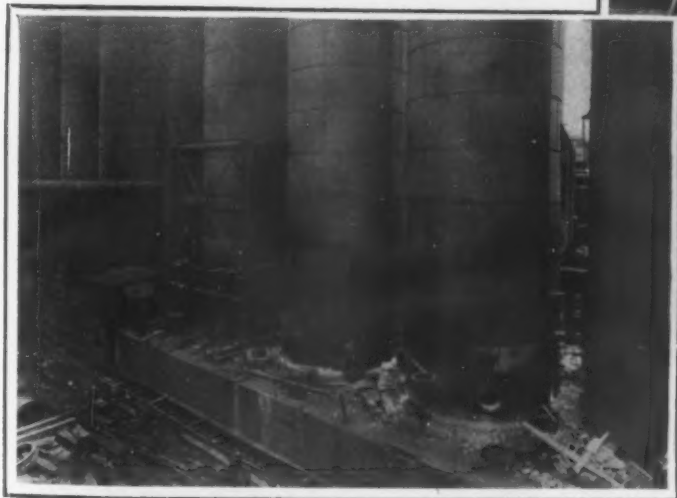
Improvements in two Columbus furnaces and eight hot stoves include increasing volumetric sizes of East and West furnaces while keeping the heights at 75 ft., and raising entire remodeling of eight hot stoves. While new concrete foundations were being put in, the furnaces were held up by bridge girders as shown



Method of Jacking Up and Leveling West Furnace



New and Old Elevation of Hot Blast Stoves and Method of Raising Stoves (below)



Method of Jacking Up and Leveling West Furnace, and Preparation Work for Setting of New Foundation, Base Plates and Columns

blowing-out to blowing-in, lasted from Nov. 16, 1919, to June 3, 1920.

Frey, Brassert & Co. were consulting and supervising engineers in the above work. In cooperation with the management of the Columbus works, J. C. Miller, general manager; R. H. Sweetser, works manager, and J. E. Thropp, Jr., superintendent, a construction force was organized and put under the charge of R. W. Clark, resident engineer, Frey, Brassert & Co., as superintendent of construction. The Mt. Ver-

non Bridge Co. had in charge both the actual shell repairs and renewals at both furnaces and stoves, the placing of new columns, hearth and tuyere jackets, bands and bustle pipes, the installation of the new gas cleaning and gas main system, etc. The Rust Engineering Co. placed all linings at both furnaces and stoves; Charles D. Schlundt blasted and removed the salamanders; J. D. Lyon, consulting engineer, Cincinnati, also cooperated as consultant in reference to the new steam installations.

UNDERSELLING BY EXCHANGE

Continental Steel Makers Competing in England —Laws Against Dumping Advocated

The extent to which the high value of the pound sterling as compared with German and Belgian exchange is affecting the British steel market is commented on by the *London Ironmonger* in its issue of Oct. 30, as follows:

The sales of Continental steel products in this country at prices which are often pounds below those quoted by British makers have led to a revival of the demand for legislation against dumping. The high value of sterling in exchange with the Continental producing countries enables the Continental makers to cut prices, and our government some time ago gave a half promise to introduce legislation to protect British manufacturers from the effects of underselling on a depreciated foreign exchange; but the situation is so complicated and unstable that it will be difficult to discover a method acceptable to all the interests concerned.

Facts scarcely bear out the assumption that the cheap offers received from the Continent are entirely due to the exchange. The Belgian quotations for iron and steel are well below those of other countries, although the Belgian exchange is not so bad in relation to the £ as the German. Such German offers as have been received have been for comparatively small quantities, and at prices which were not attractive compared with the Belgian. This is probably due to Belgium being now fairly well off for home-produced coal, while Germany is understood to have had to buy coal in America, where the low exchange value of the mark has told against her. A low exchange, while it facilitates a certain form of so-called dumping, increases the cost of foreign raw materials to the "dumping" country.

It is interesting, however, to note that the present German home prices for iron and steel when translated into sterling are preposterously low. The home price for shapes, for instance, is 2340m. per ton, which is equivalent at the present rate of exchange to about £9 15s. The export of iron and steel material from Germany is regulated by the government, and an export duty is levied; but, even allowing for this, the price of German sections is well below the British price of about £24 per ton. So far we have not heard of German offers of this material, but the quotation serves to illustrate the argument upon which the call for legislation is based. Fairly large quantities of foreign wire nails have been offered here, and this week we have seen a quotation at 36s. basis per cwt. c.i.f. United Kingdom port. The country of origin was not specified, but it was obvious that the material was Continental. The British price was recently reduced to 44s. per cwt., and the British wire-nail makers, therefore, have cause for anxiety.

Record Making in Tractor Production

During the four months from June, 1920, to October, 1920, the Ford tractor plant in Dearborn, Mich., and the assembly plants at Des Moines, Ia., St. Louis, Kearney, N. J., and Cork, Ireland, established records for tractor production. The combined output for June was 9,149 tractors, for July, 9,776, and for August, 10,248. The September output was 10,200. The September output is regarded as a record, owing to the fact that Labor Day was a holiday, cutting the production by about 400 machines. On August 18, Fordson tractor No. 150,000 was turned out, while No. 100,000 was turned out on Feb. 18 preceding. Thus 50,000 tractors were turned out in six months.

Welding Patents Association

At a meeting of the Welding Patents Investigating Committee, composed of nearly 500 members, held at the Hollenden Hotel, Cleveland, Nov. 9, it was decided to form a permanent organization which will be known as the Welding Patents Association. The committee was originally formed in 1917 to conduct litigation testing the validity of patents on the process of spot welding. Henry C. Milligan, president Republic Stamping & Enameling Co., Canton, Ohio, who has been chairman of the committee, was elected as chairman of the association.

Henry Ford has announced that he will start operation immediately of the Imperial mine in Baraga County, Michigan, which was included in his recent purchase of Upper Peninsula timber and ore lands.

Gasoline or Electric Operated Portable Crane

A light portable crane, operated by gasoline or electric motor and designed for mounting on a motor truck, caterpillar truck, a steel-wheel industrial truck, trailer, railroad flat car, portal pier or ground foundation, has been brought out by the Universal Crane Co., Swetland Building, Cleveland. This crane is designed for service similar to that performed by locomotive cranes and is an unusually flexible handling device, as its various mountings permit it to be put to numerous uses around industrial plants, for railroad maintenance work, storeyards and contractors.

The crane has a capacity of from 3 to 4 tons and is designed for ordinary lifting, for which it is fitted with a hoist block and hook, for handling a ½-cu. yd. clam shell bucket and an electric lifting magnet. It is equipped with a 14 to 28-ft. boom, depending on requirements. Its standard capacity rating with a 20-ft. boom is 3 tons at a 12-ft. radius, and loads of 1½ tons may be handled at any radius up to 20 ft.

Power for all operations is supplied by a 40-hp. gasoline engine or by an electric motor of similar capacity, the latter being provided if desired, usually when the crane is to be used in a location convenient to a power line. The gasoline motor is a heavy duty,



Portable Crane Operated by Gasoline or Electric Motor and for Mounting on Truck, Car, Pier or Foundation

4-cylinder slow speed engine, designed for severe service.

The crane has a full circle swing and is operated by one man on the platform with all operating levers in easy reach. In case a lifting magnet is used with a gasoline motor driven crane, a plug connection to an electric line can be made, or electric equipment can be placed on the crane to supply the current. The crane, without mounting or boom, is approximately 8 ft. 6 in. in length, 7 ft. in width and 8 ft. in height from the mounting line to the top of the cab.

The company is also bringing out a special type of truck to be used as a mounting for the crane and which will be propelled from the crane motor. This drive is designed particularly for short distance travel for spotting the crane and will permit traveling at ordinary locomotive crane speed. The truck frame is constructed of channel steel and it has steel wheels with 9¼ in. tread, of the dual type, part of the wheel base being turned and flanged to run on a railroad track, and part wide faced for road or yard travel. For the latter it is fitted with a steering gear. The truck has a 7-ft. wheel base, and this length and the wide wheel spread make it stable under a crane load. The truck body is mounted on springs above the axles, but the spring yield is limited to avoid excessive roll of the crane when it is swinging a load. It is stated that when operating on reasonably level ground, the crane will travel with its full rated load suspended.

The Crucible Steel Co., Pittsburgh, through chairman of the board, Horace S. Wilkinson, has announced that its Midland, Pa., plant is in full operation, denying the report that this works has been closed down.

Sentiment Opposes Price Reductions

National Machine Tool Builders' Association Considers Business Conditions—Cancellation of Contracts Discussed and Paper on Legal Phases Presented

ADDRESSING the nineteenth annual convention of the National Machine Tool Builders' Association at the Hotel Astor, New York, last week, President Albert E. Newton, after reviewing the business situation, said that "any reduction in prices on machine tools will not stimulate demand, and is more likely to work to the contrary." This, in fact, seemed to be the general sentiment among members of the association, and the prediction was freely made that there would be no general reduction in machine tool prices, at least while present high labor costs continue.

Next to the question of prices, the matter of cancellations was uppermost in the minds of the machine-tool manufacturers, as was evidenced by a lively discussion which took place following the reading of a paper on the legal aspects of cancellations by W. Randolph Montgomery, counsel for the National Association of Credit Men. The trend of this discussion was that cancellations cannot be wholly prevented, but that they can be minimized by sellers taking a more decided stand against them and also by educating the buyer to feel a much larger share of responsibility when he places an order.

August H. Tuechter, of the Cincinnati-Bickford Tool Co., Cincinnati, was elected president, succeeding Albert E. Newton. Mr. Newton continues as a member of the executive committee. Other officers elected were: First vice-president, E. J. Kearney, Kearney & Trecker Co., Milwaukee, Wis.; second vice-president, C. Wood Walter, Cincinnati Milling Machine Co., Cincinnati; secretary, Carl E. Dietz, Norton Co., Worcester, Mass.; treasurer, Winslow Blanchard, Blanchard Machine Co., Cambridge, Mass.

President Newton on Business Conditions

The convention opened Thursday morning, Nov. 11, and after the usual preliminaries, listened to the annual address of the president, which was in part as follows:

"For the past few months business in general has been on a down grade, attaining greater velocity as the time went on, so that now, even if the brakes were set hard, we could not expect to stop the downward trend at once. Therefore, let us face the situation as it is, and realize that we are face to face with a real depression, and that the orders for machine tools are few and far between.

"Let us ask what are we going to do about it? Can we by any act of ours better the situation? The answer is 'no.' Most of us know from experience that the demand, or lack of demand, for machine tools is entirely beyond the control of the machine tool builders. We also know that any reduction in prices on machine tools will not stimulate the demand, and is more likely to work to the contrary.

"We should realize that the present condition of our industry requires us to be calm and courageous, think clearly and deliberately, and deal in facts and not theory.

"During the past five years the machine tool industry, as a whole, has not increased its prices as much as the costs have increased, and to-day our margin of profit is not on as high a plane as it should be. Bear in mind that we must continue to improve our product, and that experimental and development work is a necessary part of the cost of machine tools. Also, that to produce a high-grade machine we must have high-grade workmen, and to secure and keep high-grade

workmen, we must grant comparatively high wages.

"There is only one cause that I know of that should either increase or decrease the price of a machine tool, and that is cost, and I submit that our costs are to-day higher than ever before. It has been stated, and I believe it to be true, that the recent increase in freight rates will add 5 per cent to this cost.

"We know that decreased production means higher overhead cost, so that even if our raw materials may cost us less in the near future (and I am not so sure that this will happen), this possible saving will be more than offset by the increased overhead cost due to reduced output.

"The depression with which we are now contending is no new experience for us, and is not a surprise, as we have been expecting it for some time; in 1913-'14 we experienced a situation in the machine tool industry very similar, if not worse than that which we are now passing through; that experience taught us the real value of our association, a value that has never, and can never, be too highly rated.

"I believe that most of our members fully realize that the values which accrue to them from the fruits of our association are proportionate to the time and mutual support given by them, and that our collective future as members of the National Machine Tool Builders' Association is dependent upon the unselfish and friendly co-operation of each individual.

Cancellations of Orders

"There is another important subject which always appears in times such as we have with us at present; that is, the cancellation of orders.

"It certainly would seem reasonable that an industry such as ours, which of necessity must purchase in advance its materials and supplies, sufficient to last for months, should be protected from indiscriminate cancellation of the orders on which it has based its plans.

"I hope that we may some time solve this condition and adopt some method that will raise the order for a machine tool to the dignity of a real contract, rather than a mere option that may be given up at will by the purchaser.

"It is an old saying, 'If you want a short war, prepare for a long one.' Let us attack this depression as though we thought it would last for some time; let us conserve our energies (meaning cash) so that whatever comes we shall be able to meet conditions in a business-like manner. Then we shall be ready to resume our full productive capacity when the demand for our product comes back to us, as it surely will in the not very distant future."

Export Catalog Going Ahead

Stanley H. Bullard, chairman of the committee having in charge the publication of an association machine-tool export catalog, reported that 150 members have signed contracts for space and that 325 pages have been set in English type. He also said that Charles B. Hayward, secretary of the committee, is now abroad obtaining translations of matter into foreign languages and collecting lists of names of those to whom the catalogs are to be sent.

Reports of committees on standardization of engineering data and safety codes indicated progress.

At the close of the open session Thursday morning an illustrated address was given by D. R. Weedon, of the Westinghouse Electric & Mfg. Co., on the standardiza-

tion of electrical equipment as applied to machine-tool operation. His paper is given immediately below.

Frank H. Foster, a machinery dealer from China,

delivered an interesting illustrated lecture on the use of machine tools in that country. His lantern slides showed Chinese railroad and manufacturing shops.

Standardization of Electrical Equipment on Machine Tools

"STANDARDIZATION of electrical equipment cannot mean duplicate motors, control, generating apparatus, etc., but can mean standardization of design for installation or application type of drive, style of control and ratings. A great deal of benefit can be derived by putting the same general types of electrical apparatus on the same general types of machine tools.

Available Types of Motors

There are available many types of motors and control, open, semi-enclosed and enclosed, and with various degrees of protection for the motor and tool. For example, we have:

"A constant speed motor which can be used say for saws, screw machines, lathes, and general service.

"An adjustable speed motor which can be used for planers, milling machines, drills, lathes, etc.

"Constant horsepower which can be used on the general line of machine tools.

"Varying horsepower which would be applied to fans, pumps and similar apparatus.

"Motors with high starting torque which should be used for punches, shears, elevators, or any machine where a heavy flywheel is used.

"Motors with low starting torque which can be used on drills, lathes, shapers or any machine where light starting duty is satisfactory.

"Motors with high pull-out torque more particularly adapted to grinders.

"High frequency motors which so far have been applied to woodworking machines where very high cutter speeds are desired. Possibly also grinder applications will be worked out along this line.

Meaning of Motor Drive

"Then, too, 'motor drive' means to different people different things. For example: On the same line of tools some manufacturers will apply a high torque motor, others a low torque motor, some constant speed—others adjustable speed, some equip their machines completely, including a line switch, other manufacturers have even omitted starters where starters are necessary. A motor-driven tool might mean to one a motor belted to the tool from floor or ceiling, while to others it means a motor built into the machine.

"With this great diversity of ideas as to motor-driven tools, you can see that confusion and dissatisfaction occur. If the machine tool manufacturer would only take the electrical manufacturer's engineer into his confidence at the time of design, money will often be saved and worry eliminated. Very frequently a better appearing and more satisfactorily operating tool will result. Many times the machine tool builder will call in an electrical engineer after the tool is built and ask him to help apply a motor, which often makes it difficult to work out a good application. If the electrical drive would be looked upon more as a mechanical item—that is, a necessary part of the tool, instead of an afterthought, the results will be surprising.

"After a tool has been completed, it is usually necessary to make a special bracket to support the motor and sometimes a request is made that a special motor be built. Both of these plans are unsatisfactory and an earlier attention to this point would usually provide a suitable mounting without difficulty. Some manufacturers have provided a space in the bed of the machine, this entirely protecting the electric drive and saving floor space, a valuable item to-day. Others have found that a motor built into the machine works out very nicely, being economical of materials and space, beside saving gears or other driving medium.

"Some manufacturers purchase only the stationary and rotating parts of motors and build the mechanical

parts in their own shops. This is indeed treating the motor in a most mechanical way. You can see that this reduces bearings, and oftentimes expensive speed boxes, levers, and other machine parts, making a simple and compact drive, increasing the efficiency of the tool and not decreasing the efficiency of the motor.

Motor's Horsepower and Speed

"Another important item is to apply a motor of proper horsepower and speed to the tool. Only by actual tests can this be done and the electrical engineer can easily and quickly determine the exact horsepower to be applied. Very often a large size tool is purchased to machine bulky parts with light cuts. A closer study of work to be performed will result in greater satisfaction all around.

"Of course in connection with the proper power, there should be taken into consideration the range of speeds of motors. It should also be borne in mind that a variable speed motor might be either A.C. or D.C., but an adjustable speed motor is D.C. only. By 'adjustable,' I mean a motor, whose speed-setting can be definitely determined and maintained regardless of load being carried. Then, too, many operators will fail to shift gears to a higher speed if that particular geared step is large, fearing tool damage, while with an adjustable speed motor giving many small speed gradations, he will often reach and pass the speed point he feared.

"Proper cutting speeds of the tool means, of course, greater output and decreased expense. Without multiplying examples, an actual test on two machines, on exactly the same work showed a power saving of 40 per cent with direct connected motors. A planer by actual test showed an increased production during a period of 30 days of 30 per cent over a similarly operated belted machine. In another case a company having changed a tool from belt drive to motor drive, showed an actual profit in one year of \$420 due to increased output.

"Of course, in installation of motor driven tools there is a decided saving because of the omission of counter shafts with bearings, necessary millwright work, etc. In reversing service, such as planer or other shock service, the direct connected motor absorbs this stress with its inherent cushioning effect, instead of throwing the strain on hangers, shafts and belts.

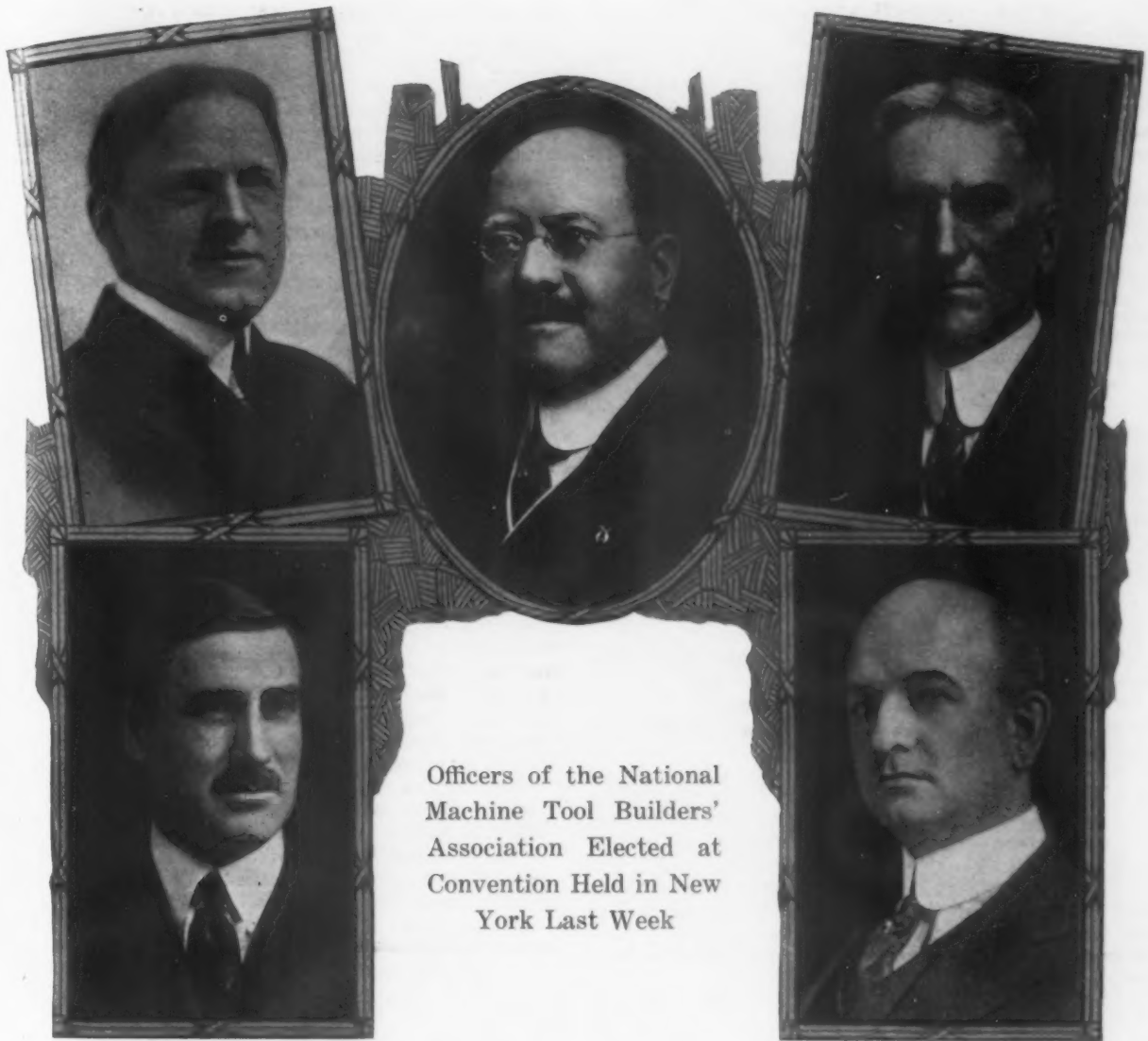
"Then, too, belts slip more at heavy loads, which is just the time the most power is needed. The direct drive eliminates these belts, gives better location of machines for production schedule, saves expense of belts and belt guards, avoids the loss due to friction, likewise the decreased output due to the increased slippage of belts.

"Of course, there are tools where it is practically imperative that belt drive be used. Many times this can be arranged by placing the motor on an extension of machine bedplate or even mounting it on the floor. This, you see, will not interfere with crane operation and interferes with the lighting effect very little. In a certain shop the lighting bill was cut 40 per cent where overhead shafting and belts were eliminated.

The Kind of Mounting

"When designing a tool for using a standard motor, the mounting should be of a type that will accommodate more than one make of motor. If at all possible, the design should take either A.C. or D.C. motors of at least two makes.

"With either A.C. or D.C. motors two types of control can be used—automatic and manual. Especially with automatic, the control can be placed at a remote location with the pilot switch within easy access of operator's hand. With manual control or starter, it



Officers of the National
Machine Tool Builders'
Association Elected at
Convention Held in New
York Last Week

Top Row, Left to Right: C. Wood Walter, Cincinnati Milling Machine Co., Cincinnati, Second Vice-President; A. H. Tuechter, Cincinnati-Bickford Tool Co., Cincinnati, President, and C. E. Hildreth, General Manager.

Bottom Row: E. J. Kearney, Kearney & Trecker Co., Milwaukee, Wis., First Vice-President, and Albert E. Newton, Past President.

should be placed as near the operator's position as possible, without interfering with proper manipulation of the tool.

"Especially on lathes, a master drum control can be operated from apron by means of a spline shaft.

"A study of utility of control, giving start, stop, reverse and speed control, will oftentimes reveal a saving on tool construction as well as simpler design.

"Many manufacturers have spent a great deal of time and money to accomplish mechanically what electrically can be done very cheaply and simply. For example: clutches, gears, expensive speed reductions, etc., can at times be eliminated as you get almost instant start or stop, smooth acceleration and slow down, fine speed adjustment and some other advantages at very low cost. As an example of an advantageous application, take a driving wheel lathe where with a push button station a 50 hp. motor is started, stopped, brought to full speed, and if a hard spot is found in the wheel, the proper button will slow the motor to half speed and when the hard spot is passed bring the motor to full speed within one second.

"By equipping the control with a proper overload relay, you can save expensive friction clutches which would otherwise often be necessary to protect the machine tool from extraordinary strains. A recent problem was to so protect a motor that with a given tool the pounds pressure could definitely limit the strain on

that press to a predetermined value. Then, too, in speaking of the overload relay, this is a great time saver for the operator. Good money will be spent for different types of tools, better steel and investigations to save an operator's time and the entire saving can be wiped out by the mere blowing of a fuse, necessitating an extended search for the plant electrician. Proper overload relays could be instantly reset.

"Of course, you realize the importance of having the starter for the motor equipped with what we term 'low voltage protection.' This means that if for any cause, the line circuit fails, the motor will not automatically restart when the current returns. Without this the operator, forgetting to open the line, might be changing a tool, or gauging his work and serious results would follow the unexpected starting of the motor.

"In selecting the starting equipment, you should carefully consider the advisability of using automatic control, with the push button conveniently placed. It has been thought by many that automatic control is very expensive, but such is not the case. In many instances, we can actually give you an automatic starter with low voltage and overload protection at a price equalling similar protection with a hand starter. In those cases where cost is greater, the difference is usually justifiable.

"It is true that with a complete plant driven by individual motors, there is a somewhat higher first

cost and a little more power apparatus would be installed and the power bill might be a little larger. I use the word 'might.' As a matter of fact, however, we have oftentimes found it to net lower. Most of us have found that, while the labor cost is about 50 per cent or more of the total cost of production, the power cost would be 3 per cent or less.

"Even if we increase the power 1 or 2 per cent and thereby decrease the labor cost 10 or 15 per cent it is worth while. All tests show decreased maintenance for individual drive and proper tool arrangement for production is the prime factor anyway.

"Plant engineers know and you know, that for certain groups of machinery, it will oftentimes work out very well to have one motor drive several tools. The machine tool manufacturer, however, wants the best possible result from his own machine and this usually with more or less disregard, within reason, to the first cost of the tool.

"There have been several cases where a machine tool manufacturer made certain statements regarding production which he could not meet with group drive. You give a customer a certain production schedule which if his drive conditions are faulty your tool will fail to meet. Your service engineer could determine that the fault is really in the drive conditions, but this involves criticism of the customer's plant organization and might be a disagreeable task in many instances.

"You know that in the past five years there has been a steady increase in the power absorbed by machine tools, and an actual test of the ability of your machine to absorb power is the safest and most convenient method for you.

"You can see that in order to make a 'real' application, and this means to get all tool builders applying the same types of electrical equipment to the same general line of tools, requires a careful study of the nature of the service, such as continuous or intermittent rating, variable, light or heavy load factor, which brings into consideration the temperature rating allowable, and the proper application regarding high and low torques and speeds. For these various combinations there are motors and control available.

"All of you are probably in favor of the motor driven machines anyway, but what we would like is to have these machines motor driven in somewhere near the same manner.

"We are anxious to get into the design of your tools at the time of design, to work out with your engineers just what motor and control to apply, so that the maximum possible results will be obtained from your machine.

"In the last analysis, you are the ones who win by supplying a properly driven tool. Your aim is to furnish a machine which will satisfy your customer with that machine as a whole, and the electrical engineer can assist you toward this end."

Real Peril in Delaying Trend Toward Stabilized Basis

At the Thursday afternoon session an interesting address on present business and financial conditions was delivered by Francis H. Sisson, vice-president of the Guaranty Trust Co. of New York. He discussed the situation at home and abroad. In replying to a question as to when stabilization of foreign exchange may be expected, he held out no hope that such improvement may be expected in the very near future. He said that production abroad would have to increase to a considerable extent, so that their goods could be exchanged for our goods, before there will be any pronounced revival in export trade.

As to the domestic situation, he stated that a revival in business will be dependent upon the process of liquidation. How rapidly production will be restored to normal will depend, he said, upon the rate at which existing stocks of merchandise and commodities generally are absorbed by consumers, and especially by the rapidity with which the recent reductions in wholesale prices are extended to retail prices.

"The real peril of the present crisis," Mr. Sisson said, "is not in the fall of prices, but in delaying the trend toward a stabilized basis. Either the supply of goods and services without any corresponding net addi-

tions to credit or currency, or else the purchasing power in the hands of the public must be reduced."

Summing up the credit situation, Mr. Sisson predicted that there would be no easy money for some time to come. He said, however, that lest he be considered a "crêpe hanger," he would say that once the present process of liquidation of credits and commodity prices is accomplished he looked forward to a period of splendid prosperity for the United States.

Cancellations of Orders Discussed

Following Mr. Sisson, W. Randolph Montgomery, counsel for the National Association of Credit Men, New York, delivered the following paper on the legal aspects of contracts and cancellations:

"It has been the boast of American business men that the last decade has seen an improvement in business morals; that the abuses of confidence between business men have become more or less a thing of the past; that when a contract was made, the goods would be taken and would be paid for.

"The boast was not altogether unjustified, and indeed a great organization of business men has adopted a so-called set of canons of commercial ethics, and these canons of commercial ethics have met with unqualified approval by its 35,000 members. The fifth of these so-called canons of commercial ethics reads:

"The pledged word upon which another relies is sacred among business gentlemen. The order for a bill of goods upon which the seller relies, is the pledged word of a business man. No gentleman in business, without a reason that should be satisfactory to the seller, may cancel an order. He would not ask to be relieved of his obligation upon a note, or a check, and his contracts of purchase and sale should be equally binding. The technical defense that he has not bound himself in writing, may avail him in courts of law, but not in business ethics."

"Gentlemen, it was all settled. The contracts were to be observed without question, a buyer having placed an order, would always take the goods and pay for them. We were in a period of expansion. A hungry, naked war-torn world was crying for American goods. Gold was flowing into American coffers in unprecedented amounts. Prices were rising, and whenever any man announced that he had a mouse-trap for sale, the world made a beaten track to his door, whether he supplied a better mouse trap or a worse one.

Test Comes When Prices Decline

"My friends, it is very easy to set up moral standards when the market is advancing. The real test of strength comes when the crest of the wave has been passed, and the bather finds himself caught in the backwash of a treacherous undertow; and that time, gentlemen, has come to America to-day. What has happened?

"Pious expressions about the sanctity of contracts are as potent as the 'fourteen points' were, confronted by the hatreds and passions of the European nations, when they met in conference two years ago to-day.

"We are in a period now when in some industries cancellations are more numerous than orders. Buyers had been speculating on continued prosperity; on continued extravagance by a lavish public—and then suddenly the public struck. No one knows why, and no one knows exactly when the period of buying stopped.

"A great retailer in New York City cut his prices 20 per cent and proclaimed himself a moralist and a philanthropist. How accurately John Wanamaker had sized up the situation few people realized at that time. It was the first spectacular evidence of a fact which we all realize to-day, that the zenith was passed, and that prices had begun to drop; and with falling prices is there anyone who wants to take goods at zenith figures if he can possibly avoid it?

"For months and years buyers had been in a position to reject and cancel their orders as they chose. No one cared, for always there was someone to take what another rejected; and what is the result? Buyers began to study the legal aspects of the so-called contracts that they had made, and they found this: That

(Continued on page 1369)

Machinery Dealers on Trade Recession

Belief Expressed that There Is No Justification for Lowering Prices — Will Form Definite Policy for Handling Cancellations

PRICE changes and cancellations of orders were the chief topics under consideration at the fall meeting of the machinery section of the National Supply and Machinery Dealers' Association at the Hotel Astor, New York, Nov. 12. The two sessions were coincident with the last day's meeting of the National Machine Tool Builders' Association and were held in a room adjoining the gathering of the latter. The program was of an informal nature, the speakers not having been assigned to any definite subjects. However, eight live subjects for discussion appeared on the printed program.

With one exception, the speakers contended that there should be no material reduction in the prices of machine tools in the immediate future. The minority party was C. A. Schumann, Badger Packard Machinery Co., Milwaukee, Wis., who said in part: "Prices must be made lower on machine tools, for the buying public expects it. I think that a general reduction is almost essential."

The Prevailing Opinion

The majority opinion was, in short, as follows: The machine tool industry is one of the stabilized, essential industries—not one of the speculative ones. In the era of advancing prices, this industry was slow to mark up prices. The elements entering a machine tool are raw materials, labor and overhead. A drop in materials would have little effect on machine tool building costs; labor cannot be reduced because the machinist is already underpaid, compared to other craftsmen, such as bricklayers and railroad workers. Overhead cannot be reduced, once it has been established. The machine tool industry never has been overpaid; there are patterns, jigs, fixtures, etc., which have to be thrown away and other such unavoidable expenses. There have been and will be a very few reductions by those who raised prices in an abnormal manner.

Dealers from many sections of the United States and Canada outlined conditions in their districts. The present depression dates back from two weeks (as reported by a Canadian) to 10 weeks. Many gave their experiences in cancellations, which ranged from a fraction of 1 per cent of orders to 20 per cent. All agreed that some step should be taken concertedly by dealers and manufacturers to discourage cancellations. A committee was appointed to confer with a similar committee from the builders' association to draft a standard contract of sale, incorporating non-cancellation clauses, and to plan a standard method of procedure in case of cancellation requests. The dealers appointed the following committee: George H. Cherrington, Brown & Zortman Machinery Co., Pittsburgh; W. J. Radcliffe, E. A. Kinsey Co., Cincinnati; W. E. Shipley, W. E. Shipley Machinery Co., Philadelphia, and H. W. Strong, Strong, Carlisle & Hammond Co., Cleveland.

Mr. Doan's Position

J. B. Doan, American Tool Works, Cincinnati, a manufacturer who was once a dealer, gave reasons which he said prevented a general reduction in the price of machine tools. He claimed that the wages of tool builders' labor had not been inflated, as in the case of a certain stove manufacturer whose molders had been getting from \$15 to \$30 a day. Therefore, wages could not be reduced. It costs about \$40 a ton to make pig iron, he said, and iron is selling at that price now. So iron cannot be reduced. Moreover, 30 furnaces blew out in October, curtailing production. Neither is there great hope for a reduction of steel.

"There must be an honest-to-goodness reason for reduction of machine tools before any can take place," he continued. "I have had several instances called to my attention where business has not been placed be-

cause of the expectation of lower prices. A list would be issued; some dealer would quote a reduction on one tool, then the entire list would be held up, the purchasing agent expecting a general reduction. Our duty as an association is to stabilize confidence on the part of the buyers. One can't compare the machine tool industry with a more speculative one like the dry goods trade.

"THE IRON AGE has unfortunately led people to believe that there would be a reduction in prices," he said; "the *American Machinist*, on the other hand, has pointed out why there can be no reduction, and says that prices are fair and should be maintained.

"If the cast iron entering one of our 18-in. lathes should be reduced 25 per cent, we could reduce the price of our finished machine not more than 3 per cent."

Conditions Reviewed

Percy M. Brotherhood, president Manning, Maxwell & Moore, Inc., New York, gave a résumé of conditions. He said that a general buying movement would start next July as near as he could guess. Things are not as bad as people make out. Many, of course, are banking on railroad business, but have been disappointed. However, his firm has secured considerable railroad business in the large machines, which it takes several months to make. The railroads, he thinks, will wait before they purchase smaller tools, knowing they can pick them up most any time. When this buying movement starts, business will be spread to the benefit of all. Railroad buying will also bring forth business from lines of manufacture incident to railroad equipment makers. The larger tools will not come down in price until labor costs decline. Lower raw materials and more efficient production are not important as influences making for lower priced tools, he said. Though "in a way" buying is being deferred in the expectation of lower prices, some of the bigger manufacturers are proceeding with purchases, such as the General Electric Co.

W. A. Viall, Brown & Sharpe Mfg. Co., Providence, R. I., agreed with the majority that prices could not be reduced at this time. He said that to-day there are no heavy stocks in the hands of the manufacturers. Their policy will be a receding one, tapering off production, and placing in stock a few representative sizes. Nobody will take steps to increase plant capacities. Dealers can look forward to a period of quiet. The speaker had talked with several machinery men, some of whom placed the expected revival in April, others in July, and one a year from now.

Probable Date of Revival

In the discussions, some named February as the month when the revival of business would set in. No one present admitted that he would be willing to reduce prices in order to liquidate stocks of tools on hand. In the matter of cancellations, all agreed that no two requests for cancellation could be handled exactly the same. The particular circumstances of the contract and the date of delivery of the tool would enter into the question. It was generally agreed that where delivery of machinery is delayed long after the specified time, the buyer may have legitimate reason for canceling. Many dealers had received such letters as this from buyers: "If you ship the tool, we shall be unable to pay for it."

One dealer narrated how the clause in his contract, stating: "No cancellations allowed without our consent," had been altered in recent contracts by striking out the last three words. A dealer suggested that buyers canceling be required to pay a certain percentage of the cost of the tool for the privilege, thus to compensate the dealer for his costs in making the sale.

Several dealers favored price guarantees over a period of months, with a refund on the part of manufacturers in case the price was reduced in that time. Another hopes that if prices are to be reduced within the next six months, they be reduced before the new year, so that inventories may be taken at the lower price level.

It was the consensus of opinion that dealers should carry low stocks for three or four months, not only to keep down the cost of inventory, but also to enable tool builders to size up the true demand. One dealer said that dealers owe it to the manufacturers whom they represent to keep a full representative line in store, where it may be inspected by prospective pur-

chasers. The same dealer said that he now had the biggest stock he had ever carried.

There was an attendance of about 75. J. W. Wright, first vice-president, in charge of the machinery interests, and member of Colcord-Wright Machinery & Supply Co., St. Louis, was to have presided at the meeting, but was taken ill of appendicitis at his home previous to the convention. W. J. Radcliffe presided in the forenoon session and George H. Cherrington in the afternoon. D. Nast, D. Nast Machinery Co., Philadelphia, was elected a member of the association. Thomas A. Fernley, secretary-treasurer of the association, managed the meetings, assisted by T. James Fernley, advisory secretary-treasurer.

Local Sections of Cost Accounting Society

The Industrial Cost Association, a recent organization whose object, among other things, is to stimulate the interest of manufacturers to determine costs accurately and which is made up of the officers, directors and managers of industrial corporations, firms and trade associations and employees having the executive supervision of cost accounting, has decided to organize local sections. W. E. Hundley, auditor Mesta Machine Co., is chairman. A. A. Alles, Jr., secretary Fawcuss Machine Co., Pittsburgh, and secretary-treasurer of the association, is a member of the local sections committee. The executive offices of the association are in the Peoples Bank Building, Pittsburgh. Among the members are the following:

A. J. P. Bertschy, president, Bertschy Engineering Co., Cedar Rapids, Iowa.
 F. X. Brugger, supervisor of costs, General Electric Co., Pittsfield, Mass.
 C. H. Fellows, cost accountant, Bijur Motor Appliance Co., Hoboken, N. J.
 L. J. Flynn, auditor, Van Dorn Tool Works, Cleveland.
 G. E. Fuller, secretary, American Gas Engine Association, Chicago.
 H. J. Kalkbrener, cost accountant, Sweet & Doyle Foundry & Machine Co., North Troy, N. Y.
 C. J. Kenerson, auditor, Morse Chain Co., Ithaca, N. Y.
 W. Lower, secretary-treasurer, National Association Sheet & Tin Plate Manufacturers, Pittsburgh.
 G. L. MacKay, secretary-treasurer, St. Louis Machine Tool Co., St. Louis.
 E. L. Moberg, chief accountant, Vanadium-Alloys Steel Co., Latrobe, Pa.
 W. H. Moore, secretary, Gulf States Steel Co., Birmingham.
 F. J. Paddon, manager cost department, Truscon Steel Co., Youngstown, Ohio.
 C. E. Piper, supervisor of costs, General Electric Co., Erie, Pa.
 F. C. Poag, statistician, New Jersey Zinc Co., New York.
 W. Rautenstrauch, professor mechanical engineering, Columbia University, New York.
 W. Ritz, assistant general manager, Globe Automatic Sprinkler Co., Philadelphia.
 C. F. Roche, assistant treasurer, E. B. Badger Sons Co., Boston.
 F. Roberts, assistant comptroller, S K F Industries, Inc., New York.
 F. A. Shick, comptroller, Bethlehem Steel Co., Bethlehem, Pa.
 M. F. Simmons, assistant manager, General Electric Co., Schenectady, N. Y.
 C. H. Smith, director clerical operations, Westinghouse Air Brake Co., Wilmerding, Pa.
 H. S. Snow, accountant, Milwaukee Electric Crane & Mfg. Co., Milwaukee.
 G. F. Stackhouse, Jr., chief clerk, Metal & Thermit Corporation, Jersey City, N. J.
 F. S. Tay, comptroller, Lamson Co., Boston.
 F. B. Voelker, auditor, American Steel Co., Pittsburgh.
 L. J. Wiltberger, chief accountant, Wheeling Mold & Foundry Co., Wheeling, W. Va.
 W. Zinsmaster, secretary-treasurer, National Bolt & Nut Co., Pittsburgh.

New England Foundrymen's Association

Dr. Robert S. Quimby, service manager, Hood Rubber Co., Watertown, Mass., gave an interesting talk on stabilizing employment at that company's plant, at the Nov. 10 meeting of the New England Foundrymen's Association, Exchange Club, Boston.

The main point Dr. Quimby brought out during his talk was that the most important problem the service department of any plant has is how it can make it easier for the foremen to help themselves to better positions and at the same time to help the workmen and the company. No service department, he said, should take away from the foreman the right to hire or discharge men, and if a man is discharged by him

he should have the opportunity to work elsewhere in the plant if so desired, and his case warrant continued employment. At the Hood plant all men leaving are interviewed for the purpose of discovering the reason. By so doing the service department soon discovers if a foreman is unjustly discharging men. This company was one of the first to install a company store, which has been highly successful. Dr. Quimby says the store is in the process of liquidation, the management considering it has served its purpose now that prices for commodities are declining.

A. B. Root, Jr., president, presided at the meeting, which was well attended. Charles Read, Read, Fears & Miller, Boston, pig iron, was made chairman of the annual meeting entertainment committee. The annual meeting will be held the second Wednesday in January.

Plans of the Maine Founders' Association

Following the meeting of the Maine Founders' Association, on Oct. 27, at Waterville, Me., as announced in THE IRON AGE of Oct. 28, the president, L. H. McFadden, Androscoggin Foundry Co., Auburn, Me., has given out a few particulars about this organization, which is three months old. There are now 15 members, and the membership is expected to reach 30, at least. There are 45 brass and iron foundries in the State. Headquarters will be maintained in Lewiston. Meetings will be held for the purpose of discussing technical papers and for coming in contact with fellow craftsmen in a social way. It has not yet been decided whether the Maine Founders' Association will affiliate with the New England Foundrymen's Association. The secretary is Orrin F. Frye, Watson, Frye & Co., Bath, Me.

Anniversary Meeting at Providence

The Providence, R. I., section celebrated the fortieth anniversary of the foundation of the American Society of Mechanical Engineers, Nov. 5, with a dinner at the University Club and a lecture by Dr. K. G. Mackenzie, New York, consulting chemist, Texas Co. on modern oil refining, at the rooms of the Providence Engineering Society. Luther D. Burlingame, industrial superintendent Brown & Sharpe Mfg. Co., Providence, and secretary American Institute of Weights and Measures, New York, gave a talk on the contribution of the organization to engineering progress.

Percy Clarke and Isaac Williams, of the Cargo Fleet Iron Co., Ltd., Middlesbrough, England, have ordered from Arthur G. McKee & Co., Cleveland, seven additional cleaner units to be added to their original three-unit Kling-Weidlein gas cleaning plant. Arthur G. McKee & Co. have also been awarded commissions by the Cargo Fleet Iron Co., Ltd., covering the furnishing of a McKee revolving distributor and one 120 cu. ft. scale car for its Middlesbrough plant.

The New York Chapter of the American Society of Steel Treating held its regular monthly meeting at the Machinery Club, 30 Church street, New York, Wednesday evening, Nov. 17, when it was addressed by W. R. Moore, sales engineer Norton Co., Worcester, Mass., in a lecture on "Grinding," illustrated with stereopticon views. The meeting was preceded by a dinner at the Machinery Club.

CARNEGIE COAL STORAGE

New Yard Near Clairton, Pa., of 250,000 Tons Capacity

The Carnegie Steel Co. has about completed at Wilson station on the Monongahela River, just below Clairton, Pa., a storage yard for coal. This storage unit will serve primarily as a reserve from which coal for coking at the Clairton by-product coke plant may be drawn. Coal for the Clairton plant is received in barges from river mines, and the interruptions to navigation due to fogs and ice, which occur especially during the fall and winter months, render it desirable to have a considerable stock of coal available to avoid the necessity of slowing up the coking operations during such interruptions in the regular receipt of barge coal.

The storage made available by the present construction will hold approximately 250,000 tons of coal and can be filled either from barge or railroad car. A cross section of the yard, including river wall and railroad tracks, is here shown and illustrates the general features of construction and operation. The storage yard proper is formed by two parallel concrete walls about 400 ft. apart. These walls extend for a distance of 809 ft., so that the area of the space available for stock-

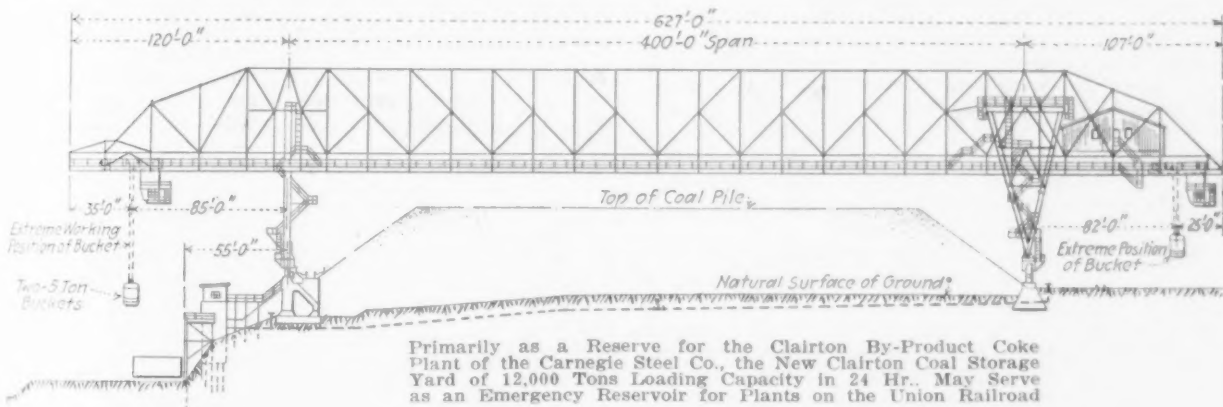
and is designed for a capacity of 10,000 tons per 24 hr. when placing coal into stock. The capacity for reloading from the pile into cars or barges will be approximately 12,000 tons per 24 hr.

Manufactures of District of Columbia

WASHINGTON, Nov. 16.—The Census Bureau has just issued its first report on results of the census of manufactures for the year ended Dec. 31, 1919. This statement, which deals with the manufactures of the District of Columbia, has more than local interest because of comparisons in values of products, salaries, wages, and other elements entering into manufacture between 1914 and 1919. The last census of manufactures was taken in 1914, but hereafter it is to be a biennial affair.

The value of products of the District of Columbia factories increased 135 per cent from 1914 to 1919. Salaries increased in total 134.1 per cent. The value added by manufacture was 119.4 per cent. Wages increased in total 116.8 per cent. The number of salaried employees increased 61.1 per cent. The capital employed increased 54.2 per cent. The number of wage earners increased 19.1 per cent.

The capital invested in District of Columbia fac-



ing coal is in the neighborhood of 320,000 sq. ft. For the present at least no concrete or other floor is contemplated, the coal being piled directly on the surface of the ground as it exists.

The coal handling bridge, which travels the length of the yard on rails mounted upon the concrete walls above mentioned, is 627 ft. in length overall, this length consisting of a 400 ft. span over the storage yard proper, with an overhang of 120 ft. at the river end and 107 ft. on the end farther from the river. Mounted on this bridge are two trolleys operating on separate parallel tracks, each carrying a 5-ton grab-bucket. The extreme working position of these buckets is 85 ft. beyond the pier at either end of the bridge. The trolleys have a traverse speed of 1000 ft. per minute and can hoist at the rate of 500 ft. per minute. The whole bridge travels at a speed of 125 ft. per minute.

Coal received in barges is handled directly from the barge to the yard by means of the grab-buckets. Coal received by rail in hopper cars is dumped from the elevated track carried by the wall at the river end of the bridge, falling into the trench along that side of the yard, from whence it is placed in stock by the bridge. In taking the coal out of stock for use, the general procedure will be to load into barges by means of a grab-bucket, although it will be possible, if desired, to load into cars by the same means.

Cars can be loaded either on the elevated track at the river end of the yard, described above as used for unloading inbound rail coal, or on any of the several tracks located parallel with the yard under the end of the bridge farther from the river. All these tracks are connected with the Clairton branch of the Union Railroad, and the coal in storage is therefore available not only as a reserve for the Clairton coke plant but also as emergency storage for all the plants of the Carnegie Steel Co. located on the Union Railroad.

The bridge was built by the American Bridge Co.

tories increased from \$40,799,000 to \$62,906,000. There were 513 establishments in 1914 and 592 in 1919, an increase of 15.4 per cent. These establishments employed 11,455 persons in 1914 and 14,309 in 1919. While the increase in the number engaged in manufacture was 24.9 per cent, the amount of the salaries and wages paid increased from \$8,622,000 in 1914 to \$19,132,000 in 1919, or 121.9 per cent. The value of the products increased from \$28,904,000 in 1914 to \$67,936,000 in 1919.

Removable Bay Facilitates Boiler Handling

For the expeditious handling and loading of large boilers an ingenious system of shop construction has been resorted to at the Chalon Works of Schneider & Co., France. According to the *Engineer*, London, one end of the bay is built in sections, the upper frame resting on girders which project, at a height of 40 ft., to a distance of 70 ft. into the outside yard. These girders act as rails, both for the frame and for the overhead traveler, which takes the end section and pushes it along as far as may be required. Thus the whole end of the bay can be removed bodily and transported some 70 ft., free access being allowed to the railroad cars upon which the boilers are to be loaded.

A section of the American Welding Society will be organized in Cleveland at a meeting to be held at the rooms of the Electrical League, Statler Hotel, Wednesday evening, Dec. 1. Officers will be elected at that time. It is expected that the Cleveland section will start with a membership of from 150 to 200.

Damage estimated at \$30,000 was caused by fire last week to the plant occupied by the A. L. Smith Iron Works, Chelsea, Mass., fabricator.

The Metal Supply Problem in Germany—II

Future of Lead and Zinc Depend on the Plebiscite in Upper Silesia—Rigid Conservation of Nickel—Magnesium as Substitute for Aluminum

—BY C. A. HEISE—

[In the preceding article the situation regarding copper and tin was discussed at length. One conclusion was that in the next decade, for purely economic reasons, Germany would be compelled to reduce her consumption of copper to a minimum. Also it was pointed out that the advance in steel casting practice had robbed brass of much of its boasted superiority. In tin, war experience with substitutes will tend to a reduction of imports of that metal in future.—EDITOR.]

Lead and Antimony

Germany's total consumption of lead in 1913 was something like 223,000 tons, of which approximately 100,000 tons was obtained from domestic ores, while the rest was made up by supplies from Australia and to a lesser extent from Austria, Belgium and Spain.

Large quantities of lead were required when war broke out for the manufacture of shrapnel bullets, cartridges, cables, solder compositions, bearing metal, and—especially after the declaration of the unrestricted submarine warfare—for accumulators for submarines as well as for rust-proof coatings. It was in 1916 that the absence of foreign supplies made itself felt acutely. Supplies gained through commandeering were inconsiderable. Some thousand tons was obtained from lead keels of sailing vessels, while the refining of lead ashes formed another, though costly, source of supply. On the other hand, output at the mines showed a considerable decrease as the war went on, principally due to mobilization of skilled men, decreased productive capacity and coal and car shortage. Small but regular supplies from Austria relieved the situation during the latter years of the war to a certain extent, and the placing under government administration of the lead works and white lead plants enabled the authorities to prevent the use of lead for other but essential work.

War Exports of Antimony

However, in spite of husbanding the available supplies it was eventually realized that the lead shortage threatened to assume disquieting proportions unless suitable substitutes were found. A beginning was made with shrapnel, the antimony content of which was at first reduced from 14 to 8 per cent. Antimony-arsenic compositions were also frequently used, and extensive experiments carried out with iron shrapnel bullets proved such a success that they were also introduced in the Austrian army toward the end of 1917. The soft lead cores of infantry cartridges were substituted by hard lead. The policy of severe restriction in the use of lead resulted in the unique fact that while at the beginning of the war there was an acute shortage of antimony, Germany was able to export antimony in 1917, thereby retarding to some degree the downward course of the German mark.

Although large quantities were saved in the way indicated, it should not be overlooked that there was an increased demand for lead in other fields of industry, as, for instance, solder and bearing metal compositions, as well as for protective coatings for iron marine parts. The railroads, too, consumed considerable quantities of lead, chiefly for bearings, and several thousand tons, gained through commandeering typefounders' stocks, was placed at the disposal of the railroads. Chemical works, particularly sulphuric acid plants, had their supplies rationed. Cable works, for the same reason, reduced the thickness of cables, with the result that paper cables were used for less important purposes, though it would appear that on account of the shortage of resin and oil their utilization was rather limited. It should

be stated that it was found impossible to find a suitable substitute for lead in the accumulator batteries of the submarines.

Upper Silesia and Future Lead Supply

As regards the outlook, it is difficult to predict with any degree of accuracy in what measure Germany will get independent from foreign supplies; but even under the most favorable conditions she could not hope to supply the demands of her industry by inland ores alone. On the other hand, it should be remembered that nearly one-half of the total inland production of lead is obtained from the mines in Upper Silesia which, being situated in those territories where a plebiscite will determine the ultimate fate of the respective districts, may have to be ceded to Poland under the Treaty of Versailles. That a loss of the territories in question would react heavily upon the German industry goes without saying and the trend of events in those districts is watched with lively interest.

Zinc

The world's production of zinc amounted in 1907 to 2,500,000 tons, of which total Germany had the greatest share, with an output of 700,000 tons. In 1912, however, the United States took the lead with an output of 320,000 tons against the German production of 270,000 tons. Contrary to the common belief, there was no real shortage of zinc in Germany, as the output of inland ores proved sufficient to meet the demands of the industry, the annual consumption before the war being approximately 200,000 tons on the average. A possible substituting of zinc by aluminum is out of the question for the time being, on account of the cost. During the war it was extensively used as a substitute for brass and copper in the electrical and munition industry; in the manufacture of percussion caps it was advantageously substituted by magnesium or paper.

The future aspect of the German zinc industry is inseparably connected with the ultimate fate of Upper Silesia, in view of the fact that three-fourths of the inland production is obtained from the Upper Silesian mines situated in the territories subject to the plebiscite. Should those territories be lost to Germany it would produce a radical change in the situation.

Nickel

Among the various metals used for munition purposes nickel played an important rôle. In the shape of pure nickel it was used in the construction of certain parts for marine motors and torpedoes subject to high temperatures or corrosion. Principally, however, it was employed in nickel steel for the manufacture of rifle and gun barrels, armor plates, shells, torpedo air vessels, periscopes for submarines, trench mortars, steel helmets and parts of aeroplane engines and motor cars subject to high stresses.

Germany's supply of nickel from inland ores was never significant; in fact, it amounted to about 6 per cent of the total consumption. The principal nickel mines in Germany are located in the Frankenstein district (Silesia). With the establishment of the blockade Germany was confronted with the nickel supply problem and it was soon realized that the utmost economy had to be exercised. Existing stocks were commandeered and distributed in accordance with military requirements, and energetic steps were taken to increase the output of the mines, even ores containing but a very low percentage of nickel being worked. Besides this, a part of the confiscated or voluntarily surrendered nickel

goods was subjected to an electrolytic refining process and the quantities thus gained helped materially. The 25 pfennig pieces, pure nickel coins of a nominal value of approximately 6 cents, were also collected, yielding about 80 tons of nickel. It is estimated that by collecting and smelting the other nickel coins, containing 25 per cent nickel, approximately 600 tons might have been obtained. Limited quantities were supplied from Norway up to the year 1917, when the war measures taken by the Allies with a view of hastening the end of the war rendered further shipments impossible.

Conservation Policies

Unlike copper and brass, the question of providing substitute material did not enter into consideration. Armor plates from obsolete forts and battleships found their way to the smelting works and, with the addition of some pure nickel, were manufactured into nickel steel. Great care was also taken in the machine shops of the munition works to separate nickel scrap and chips from the rest, the chips being in most cases pressed into briquettes, and the fact that even the scale of rolled products and forgings was sent through a refining process illustrates strikingly the extent to which those economical measures were carried out.

As may be imagined, the navy headed the list of consumers and such indeed were the demands that, after extensive experiments with substitute materials, it was eventually decided to discontinue manufacturing armor plates for the large ships altogether. Further experiments proved conclusively that the nickel percentage of many alloys could be safely reduced without impairing the strength of the respective parts to any material degree. For torpedo air vessels, for instance, the initial nickel percentage of 4 per cent was eventually reduced to 3 and even 2 per cent, while for shells the nickel content was gradually reduced until in the end high explosive shells were produced containing no nickel at all. It is interesting to learn that for armor-piercing shells, however, as used by the navy, a nickel percentage of less than 4 per cent proved unsuitable on account of the shells exploding when hitting the ship at certain angles. It was also impossible to reduce the nickel content of the large caliber gun barrels, though the percentage of the 4-in. and 6-in. guns was gradually reduced from 2.7 to 1.8. The periscopes of submarines in the beginning were made of an alloy containing about 25 per cent nickel, which amount was eventually reduced to 13 per cent. Further reductions, carried out by Krupp, resulted in failure, as the material was easily affected by corrosion, besides being subject to magnetic influences.

Nickel Elimination

As regards machine parts, the introduction of a new crucible steel enabled manufacturers to cut down the nickel content to a considerable degree. Even parts subject to high stresses, such as crankshafts, gear wheels, gudgeon pins, valves for torpedo boat and submarine engines, were finally made of steel containing no nickel at all. The famous Maybach motors, used in the Zeppelins, were equipped with shafts showing no trace of nickel, while a chrome steel produced by Krupps proved serviceable and reliable for the same purpose beyond a doubt. Consequently, the nickel consumption for aeroplane engines and motors was largely restricted, and it goes without saying that the extraordinary progress made during the war in the development of the electrolytic steel process largely helped in eliminating nickel. It may be mentioned that for plating purposes nickel was advantageously substituted by cobalt.

With the end of the war and the consequent dismantling of munition works and handing over of war material to the Allies, the consumption of nickel by the German industry will be largely confined to limited quantities required for the production of high-speed steel. These will have to be imported from abroad unless for economical reasons they are replaced in part by tungsten, molybdenum or vanadium.

Aluminum

The largest part of the bauxite output of the French mines—which amounted to 200,000 tons in 1910—was

refined in Switzerland, and approximately 10,000 tons was annually shipped to Germany, whose bauxite mines, situated in Bavaria, supplied but insignificant quantities.

Soon after the outbreak of the war an extraordinary demand for aluminum set in, enormous quantities being required for the manufacture of airships, flying machines, cooking utensils for army service, fuses, shells, radiators for motors, bearing metal alloys, as well as for deoxidation of steel. To a less extent it was also used in construction engineering, as for light bulkheads, partition walls and furniture for torpedo boats and submarines. Thus there was a considerable shortage of aluminum during the first years of the war and the desire to increase production as well as to get independent from Swiss supplies resulted in extensive experiments and research work in the exploitation of siliceous minerals of which great quantities are found in Germany. Several large refineries were erected during the first years, and in 1917 Germany was practically independent of Swiss supplies. During the transition period, however, the scarcity was met by commandeering available stocks and confiscating aluminum ware, careful collection of scrap and chips, etc., and rigid control in the distribution.

Magnesium as a Substitute

When it came to providing substitutes, magnesium, of which there was no shortage in Germany, came very handy. The new alloy, known under the name of Elektron, containing approximately 7 per cent of aluminum, was produced in large quantities at the well known chemical works, Griesheim Elektron, and was widely employed for all kinds of munition supplies, particularly fuses. It has proved serviceable for all-round purposes beyond a doubt, and bids fair to play an important rôle in the future as a substitute for copper and brass. Experiments carried out during the latter years of the war with a view of providing protective coatings were but partly successful, while favorable results were obtained with nickel plating by the Le Chatelier process, which latter was also introduced into the Swiss army service.

Another alloy which became widely known during the war, especially as a material for flying machines, was duralumin, though it has the disadvantage of losing in strength when subject to medium temperatures. For this reason parts made of duralumin should be joined by means of screws or bolts instead of autogenous welding.

Seeing that the crust of the earth is estimated to contain approximately 7.5 per cent of aluminum as compared with 4.2 per cent of iron, it is no exaggeration to assume that aluminum is destined ultimately to take the place of iron. This, however, is principally a question of coal and electricity, and this very fact would appear to preclude the possibility of Germany's participation in the world's supply unless she succeeds in developing her water power resources sufficiently to enable her to exploit advantageously her vast quantities of siliceous minerals.

Tungsten, Molybdenum, Chromium

The use of tungsten was largely confined, of course, to the manufacture of high-speed steel. As it proved impossible to provide a suitable substitute for tungsten, its consumption was greatly restricted and constantly controlled by the steel works association. High-speed steel, containing originally 20 to 25 per cent of tungsten, was partly substituted by molybdenum steel or had its tungsten content reduced to approximately 10 per cent. Limited quantities were also supplied from Sweden during 1917, but further deliveries were cut off through the war measures of the Allies.

With regard to molybdenum, great effort was made during the war to increase the output at the mines in Bavaria and Hessen. Operations at the former were but slowly progressing while supplies from the latter were forthcoming in 1918 in fairly large quantities.

Germany's production of chromium from inland ores was inconsiderable, the needs of her industry being partly met by the import of chromium ores from Aus-

tria, Hungary and Turkey. Though considerable quantities were also supplied by the Uskub mines (Serbia) there was a decided shortage of chromium. However, this was made up to a certain extent by the introduction of electric steel on a large scale, production of the latter having increased from 182,000 tons in 1914 to approximately 355,000 tons in 1917. In the tanning trade, chromium was substituted by pine and oak bark products.

Berlin, Germany, Oct. 20, 1920.

Depression in Welsh Sheet and Tin Plate Industry

WASHINGTON, Nov. 15.—Depression in the Welsh sheet and tin plate industries is growing more acute, according to a report from Consul A. B. Cooke from Swansea, Wales, which says in part:

"The district of Swansea, Wales, claims to be the chief steel-producing area of Great Britain; it is also the leading producer of tin plates and galvanized sheets," says Mr. Cooke. "Depression in these industries, which began to be felt several months since, is becoming more acute; it is reported in the daily press that already nine important works have either closed down entirely or have begun to work short time. The tin plate industry, which is a key industry in this district, owes its depression to lack of orders from foreign markets, which normally take the bulk of the output of the Welsh mills. This shortage of new orders is due apparently to the high cost of manufacture and to keen competition of American tin plate on the world's markets.

"The galvanized sheet industry is growing stagnant for lack of orders, even with prices of sheets considerably lower. Foreign markets have made but few inquiries recently. A further evidence of depression in the galvanized sheet industry, as well as in the general metal industry of this district, is the closing down some weeks since of local spelter works."

Needs of New England Railroads

WASHINGTON, Nov. 16.—Unless additional revenue is provided for New England railroads, receiverships are in prospect, according to statements made at a conference at the offices of the Interstate Commerce Commission participated in by representatives of the New England roads and New England manufacturers and members of various State commissions in that section.

These railroads recently filed a petition with the Interstate Commerce Commission asking for a larger division of joint rates than accorded them at present by connecting lines. A conference is to be held soon between the New England roads and connecting lines with a view of settling the question of divisions of rates to the end that the revenue of New England lines may be increased.

It was stated that even with the 40 per cent increase in freight rates and 20 per cent increase in passenger fares the New England lines face a deficit of approximately \$36,000,000 for the ensuing year under private control. It was stated that unless the question of division of joint rates is settled in a satisfactory manner, a further increase in freight rates for this section would have to be asked. It was stated that it might be necessary to ask 35 per cent additional for freight rates and the raising of passenger fares to 4c. per mile.

America in Norwegian Trade

WASHINGTON, Nov. 15.—American machinery, tools, automobiles and trucks have established a place for themselves in Norwegian markets, according to a commercial and industrial handbook on Norway prepared by Nells A. Bengtson, trade commissioner of the Bureau of Foreign and Domestic Commerce.

"American agricultural machinery is prominent in Norway," says Mr. Bengtson. "In general the high quality of American tools and mechanisms is conceded, and the expression is frequently heard that American

goods rank first in quality, but are higher in price than the same type of goods from the United Kingdom, Sweden or Germany. For the trade in metal manufactures as a whole Germany ranked first before the war, the United Kingdom second and the United States third. This position is now changed and the United States has come to the foremost place. For the future the most promising phase in this field is that of electrical equipment, because of the rapid extension of hydroelectrical power that seems imminent in Norway, and there seems to be no question that the American goods in these lines will enjoy a very prominent position because of the reputation for dependable quality that they have won."

Lancaster Iron Works, Inc., Absorbs Ohio Company

The Lancaster Iron Works, Inc., South Prince and Hager streets, Lancaster, Pa., has absorbed the Arnold-Creger Co., New London, Ohio, manufacturer of soft mud brick making machinery, including an automatic brick machine which eliminates much of the labor ordinarily required in brick making. The Arnold-Creger line will be manufactured at both New London and Lancaster. In acquiring the New London company the Lancaster Iron Works is extending an already established line, Martin brick making machinery having been one of its specialties.

The Lancaster company controls the Mire's Fuel-Oil Equipment Co., Lancaster, and in the future the latter company will be operated as a department of the Lancaster Iron Works. Thus the iron works will have a department for tank and plate work, another for furnaces and a third for brick-making machinery.

New Freight Traffic Records

WASHINGTON, Nov. 16.—Freight traffic records continue to reach new high marks notwithstanding the lull in business activity in many lines. A new record for 1920 in the number of cars loaded with commercial freight on railroads throughout the United States was made during the week which ended on Oct. 23. The total for the week was 1,010,961 cars, which was within 500 cars of the peak recorded in 1919. This total was 5298 more than were loaded during the previous week, 33,910 cars greater than the corresponding week of 1919, and 90,850 cars greater than during the same period of 1918. It was the third successive week that the total had exceeded the million mark. Among the items in which increases were shown as compared with 1919 were the number of cars loaded with coke and ore.

That the slump in business activity may affect railroad traffic a little later is indicated by the fact that car shortages are decreasing. The average daily shortage for the week ended Oct. 23 was 65,965, as compared with 69,517 for the previous week, and 147,309 on Sept. 1, when the high mark for 1920 was recorded.

National Tube Co. Buys Cars

WASHINGTON, Nov. 16.—The Shipping Board has just sold 95 steel underframe flat cars which are at Hog Island. Eighty-five of the cars were sold to the National Tube Co. for a total of \$136,000, or 76 per cent of the appraised value of \$178,500. The other ten cars were sold to the New York Shipbuilding Corporation for a total of \$16,550, or 78 per cent of the appraised value of \$21,000. Under the terms of payment, 20 per cent is paid upon the consummation of sale and 20 per cent every three months for the following twelve months.

Sheet Metal Products Manufacturers

The tenth annual convention of the National Association of Sheet Metal Products Manufacturers will be held in Chicago, Dec. 6 and 7, at La Salle Hotel. An effort has been made to address invitations to all manufacturers of sheet and metal products and an attendance of 200 or more is expected.

Industrial Engineering as Major Profession

The By-product of a Pittsburgh Convention Devoting Itself to Industrial Education in the College and the Shop

A NOTABLE meeting on the human factor in industry was held at Pittsburgh last week. It was the annual gathering of the Society of Industrial Engineers, an organization a little over three years old. A large number of its members are relatively young. Most of them are blazing trails in modern ideas of management. They are intense seekers of information. Attendance at the sessions was proportionately large in comparison with meetings of other engineering and technical associations. Active interchange of experience was as usual a feature of the intervals between sessions, but concentration on the papers and addresses was conspicuous. An exhibit of management methods and mechanisms formed a side attraction, but this was in part commercial and in part educational. Hereafter it is understood that such exhibitions as there may be will be solely educational and displays of apparatus devices or supplies available by purchase will be eliminated.

The meeting was held at the Carnegie Music Hall, Nov. 10, 11 and 12. The program covered largely the matter of education in industrial management. One session was devoted to training industrial engineers; another to the part which the country's educational institutions may take in turning out men capable of becoming industrial engineers; another session was given over to considering ways of training employees and also foremen, and another had to do with training the office force and with the industrial physician. A notable banquet featured the convention, in which no less than five speeches were successfully delivered without apparently overtiring the enthusiastic participants. The intensive character of the general conduct of the meetings, in recognition of the desire to make the most of opportunities, was shown in arranging for group lunches and dinners. These, like the banquet, were held in the nearby Hotel Schenley and brought together for more or less informal conversations those interested in personnel work, in production, in education, in fatigue elimination and the like.

The regular sessions were held in afternoon and evening, leaving mornings free for excursions to factories in the locality, permission having been gained for three or four plant visits on each of the three mornings of the convention. To meet the fatigue factor, a recess of two or three minutes was called in each session, affording a let down from concentration on the subjects under discussion, and providing the example that might well be emulated in other association meetings; the evidence was that the audience enjoyed the respite as well as the official stenographer and the chairman. This departure from ordinary procedure seems to have been made in deference to Dr. Frank B. Gilbreth, who has come to be regarded as the exponent not merely of fatigue elimination but of the elimination of unnecessary fatigue.

Training Industrial Engineers

An outstanding contribution to the first regular session was a paper entitled "Training Industrial Engineers Within an Organization," by E. L. Ryerson, Jr., vice-president and works manager Joseph T. Ryerson & Son, Chicago. "We hope," said he, "that the time may come when our educational institutions will be equipped to furnish the preliminary fundamental training required by the industrial engineer. We believe that this can be done without in any way interfering with those educational requirements that are necessary for the proper development of character and of mental capacity. . . . To-day we must meet the condition as it exists and this means that each organization must, to a great extent, educate and train its own industrial producers." His paper was in part as follows:

A survey of the qualifications most desirable for any type of engineer to possess develops the following as broadly covering the essentials, given in the order of their importance for success: 1, character; 2, judgment; 3, efficiency; 4, understanding or experience; 5, knowledge.

The first requirement, character, must generally be developed long before the individual enters the field of industry, but opportunity must be given for contacts with those who are his seniors, who have formulated ideals that are right and who can interpret correctly the policies and ideals of the organization itself.

The second general requirement, judgment, must be influenced and developed by careful instruction and guidance. The junior should be given constant opportunity to study typical examples and successful application of theory, applying to methods, machines and men. He must, during his early training, be brought in frequent and intimate contact with the workers. Tasks are assigned to him which will, more than anything else, give the opportunity to obtain the employee's viewpoint and in many instances this can only be accomplished by practical experience wherein the student takes the place of the worker. "Proper judgment of the human relationships in industry is one of our most difficult accomplishments, but likewise one of our most important. We require our candidate during his early training to read: Taylor's 'Principles of Scientific Management'; Gilbreth's 'Applied Motion Study'; and Emerson's 'Twelve Principles of Efficiency.' These give the student a broad conception of the task for which he is being fitted, without his becoming involved in the details of application."

First Steps in the Factory Training

During this period of training the individual is given a limited number of specific jobs, carefully selected for educational purposes. For instance, he may be required to create a standard practice for the wrapping and checking of express parcels, with the idea of improving the work-table and arrangement of facilities. He may be detailed to write standard practice instructions covering the use of a tool and jig record card for a pattern storage system. He will be required to study and review jobs completed by his senior, to become familiar with work of a more advanced type. The elementary jobs are used by the chief of the staff as an examination to determine the fitness of the junior for more important work and advancement.

Throughout the training of the junior engineer those lessons are taught which will most of all assist in the development of good character and sound judgment. They should create in his mind the realization that his work is largely based upon a common-sense idea with a broad application. To gain initiative, thoroughness, accuracy, decisiveness and analytical ability, the junior must be given opportunity to learn by actual experience.

Having proved his ability in the elementary work, he becomes qualified to undertake more difficult problems. Whereas previously half of his time had been given to jobs affecting minor and unimportant matters of standardization operation, we now arrange that at least 70 per cent of his time is applied on jobs affecting general systems and methods. These include the development of a form and complete instructions covering reports made by an inspection department; or a study of the routing of material after the completion of manufacturing processes to the point of shipment, together with standard instruction for it.

To bring the candidate in contact with open discussion of the various phases affecting his work, we must have frequent meetings of the members of the indus-

trial engineering staff and hold open debate. Regular lecture courses should also be given by a qualified member of the staff. In this secondary training period, the student should be constantly brought in contact with the relative values of the work performed, so that he may never lose sight of the fact that efficient management is coupled directly with profitable accomplishment. We now require the student to read such publications as: Kent's "Investigating an Industry"; Knoepfel's "Graphic Production Control"; and Jones' "The Administration of Industrial Enterprises."

The secondary training should cover a period of from eight to twelve months, after which, if the candidate has proved his ability, he may be expected to create and supervise the installation of bonus or premium schedules for any operation. He would be called upon to handle satisfactorily the studies involved in the improvement of methods as applied to machines, materials or men, and to develop standards for such purposes. During this period we require his study of such books as Barth's Supplement to "On the Art of Cutting Metals"; Babcock's "Taylor System in the Franklin Management," and Goings' "Principles of Industrial Engineering."

To gain understanding, he must cultivate association with men of other organizations doing similar work. He must follow closely local and national developments that have a bearing on the human relationships in industry, and by so doing, he must broaden his knowledge of the human element. Criticism is often justly given that the industrial engineer retained by an organization sees only what he himself creates, and fails to recognize the possibilities in what others have done. Our candidate must guard against this failing and be given frequent opportunity to visit other organizations of the same or radically different type, so as to enliven his imagination and broaden his vision.

Industry Must Train Its Production Engineers

F. L. Shanley, of L. V. Estes, Inc., an industrial engineering firm of Chicago, also discussed the subject. Of 60 per cent of applications considered worthy of an interview, only one in 50 is accepted. Then every man has to be trained in the firm's own school before being placed on an assignment. About 70 per cent of those entering the school complete the course and are kept on the staff. For the training course there is a manual covering organization, plant analysis, graphic production control, wage incentives, industrial relations. The firm's view is that the training of engineers for practical experience is the function and duty of industry, that industry should organize to provide for it, that the scarcity of practical industrial engineers will not be filled until industry realizes the necessity and the obligation; that industries now training their own engineers are finding it profitable but the cost and burden would be equitably spread if more industries would assume the obligation.

Time Study Men

The type of men who should be given the responsibilities of making time studies and the training of them was discussed in a paper by William O. Lichtner, Thompson & Lichtner, consulting engineers, Boston. And a formal discussion was read by William Baum, Holeproof Hosiery Co., Milwaukee. Mr. Baum contended that for really satisfactory work, taking into recognition the human relations side of the subject, both employee and employer should pay the time study man; in short, the worker should not merely agree to having such studies made but should have the interest which goes with being a partner with the employer in paying for the service. Mr. Lichtner in part emphasized the importance of the post of the time study man and that it is commonly and unfortunately not so recognized.

One of the highly entertaining and illuminating episodes of the meeting was an extemporaneous contribution made to the discussion, at the special request of President L. W. Wallace, by Frank B. Gilbreth, consulting engineer, Montclair, N. J. Dr. Gilbreth contended in his usual forceful and original manner that time studies as usually taken are merely averages of

both good and bad observations and that they are generally sought solely to set a wage rate and not to ascertain the one best way to do work as by motion studies made photographically with all contributing conditions recorded.

Mr. Lichtner replied briefly to what was a lively friendly debate, arguing that after all human beings were under consideration and certain refinements were offset by state of health, disposition and the like of the given individuals, both worker and time study man. The issue was not concluded but clearly Mr. Gilbreth has little or no reliance on time studies. Incidentally photographic time studies he put at 0.07 cent per observation.

Colleges Asked to Consider Industrial Engineering

What the colleges may do for preparing industrial engineers was made the topic of addresses at the Wednesday evening session. The discussion revolved in part about the considerable numbers of engineering school graduates who go into the industries and yet are given subjects of study in school which are not regarded as having even a remote advantage, especially in comparison with subjects which will be of little concern in after graduation years. The mind training objects commonly attributed to some of the studies on the average curriculum was not touched on but instead college work and subjects were attacked as lacking in incentive.

Joseph W. Roe, formerly professor at the Sheffield Scientific School at Yale University and now of the Pierce-Arrow Motor Car Co., Buffalo, pointed out that colleges did not succeed in establishing a correct attitude of mind toward work. The system of marking had in his opinion something to do with the student's feeling that when he secured an 80 per cent rating he regarded himself as 20 per cent to the good, the passing mark being 60, but in the industrial plant 80 per cent does not go because it is 20 per cent less than perfection, which is the expected goal.

F. V. Larkin, head of the department of mechanical engineering, Lehigh University, Bethlehem, Pa., had the first paper and Mr. Roe opened the discussion. Dean A. B. Wright, University of Pittsburgh, presided. Professor Larkin named seven sources from which industrial engineers may be recruited but regarded the most likely men will be those who are graduates of engineering colleges and who have supplemented the groundwork by an apprenticeship course. He did not count those coming from business administration schools as likely to give as good satisfaction. The other sources are those arriving from the school of hard work and apprenticeship, the engineering school of four years' duration, the graduate engineering course, though men of this class are ordinarily too set in their ways; the co-operative engineering course, and the industrial and commercial engineering courses. Professor Larkin has drawn up a schedule of an industrial engineering course, which formed a part of his paper.

Mr. Roe emphasized that the schools must consider the problem as one of selling their product. There must be less concentration on pure science and traditional engineering subjects. There needs to be a recognition of the fact that industrial engineers must be men of character, reliability and judgment, that these characteristics are more important than wide information and technical training. Colleges must allow the time necessary that will help bring out the qualities that are recognized by the members of a given individual's class; that is to say, the estimate of one's class as to his place in the world and his prospects is better than that of the college faculty itself. He emphasized also that the student will do better work if his college course follows a period of working in the shop—"if he knows what a backache is and the value of \$10."

Prof. E. J. Kunze, Pennsylvania State College, told of the courses begun in 1910 by his predecessor, Prof. Hugo Diemer. In this year's summer course, 42 business executives participated.

Papers were read on the evening school by C. L. Marsh, assistant dean Northwestern University School of Commerce, Chicago; on the correspondence school by Charles E. Funk, secretary Industrial Extension

Institute, New York, and editor of a factory management course, and on job analyses for industrial educational requirements by Dr. E. K. Strong, Jr., Carnegie Institute of Technology.

Training Shop Employees

Some intensely practical points on shop training marked the contributions of a session conducted under the direction of I. A. Berndt, C. E. Knoeppel & Co., New York.

J. J. Garvey, chief of works training division of the Western Electric Co., Hawthorne, Ill., covered the problems of a force of 23,000 "busy at Hawthorne and growing continually." "We are only scratching the surface," he said, "but we hope to do a real job some day." The modern worker does not have to think of his work, which instead he does subconsciously. In his experience where the worker found that thought was required, he gave up and went back to his old job. Present manufacturing methods in failing to produce skilled mechanics has forced a consideration of training them, and Mr. Garvey discussed two general methods employed, one by "absorption" as from the ranks and the other by "attention." By the former way, the man in shop got ideas as best he may, asked questions, kept himself on the alert to learn, but he advocated the second method, which was by training under a foreman, who was made responsible for the training, or by training under a man whose duty it was, or, best of all, by training in an organization within a factory but not a part of the production department.

There are some foremen, he admitted, who can keep up production and also a number of other things at the same time but in times of stress he is likely to forget a new man under his charge. The specially detailed man may devote all or a large part of his time to the new man but he must be not merely a skilled man but must know how to impart information and such men are few and far between.

He considers it quite necessary to set aside machines for the training work. They should be grouped and a fence or chalk line used to mark off the space out of which should be kept the foreman or any one else coming for production.

His preference is for separate shops containing all the machines for which it is desired to develop workmen. Cast off machines should not be used from any department. The student cannot turn out work on equipment the skilled man cannot. Class rooms are also needed for teaching shop mathematics, drawing, etc. He asserted that the independent department did not cost the company one cent, this being based on his experience with securing highly skilled workers.

Two sources of supply for instructors may be tapped, one the manual training schools though some time needs to be taken to acquaint such with the company's manufacturing processes and peculiarities. The other amounts to a recruiting from his own shop, taking the one who seems to be sought by his fellow workmen when they have needed help. The selection of the students for the course is a ticklish matter, as he expressed it, and it is probably an employment function, and requiring just as much care as buying material. The cost of such an independent training school or department is an overhead on the shop, but it is there whether the man is instructed in the shop or in the special school, but when it is set aside it stands out as a tremendous and evident expense. Now that things are getting tight in business, he admitted it may prove difficult to show the school is worth while on a strict dollar and cents basis.

Five Kinds of Schools in Ford Plant

Some of the training methods which have been developed in the plant of the Ford Motor Co. were described by F. E. Searle, superintendent of the Ford schools at Detroit. He pointed out that in 1913 52 per cent of the employees could not understand English at all or so poorly that they created a hazard. The first step was to secure teachers of English, largely from the company's own forces, and a series of rooms in the plant were partitioned off by corrugated sheet steel. The result was that in adjoining rooms there would be

the chanting of simple English sentences in one area, next to that the repeating in unison and in a loud voice of other simple sentences, and perhaps in a third compartment the singing of a third set of sentences; and so, he expressed it, the situation was changed from one of Babel to one of bedlam. But the result of the attempts to teach English is that now under 10 per cent and probably not over 5 per cent are unable to speak English. There are now classes of 500 to 600 weekly pursuing the study of English, but in separate buildings.

The next school work provided for after the English beginning classes was an apprenticeship school. Instead of providing an independent department for this work, as advocated by Mr. Garvey, the apprentices were stationed in tool rooms in the various parts of the factory. In some departments 75 per cent of the workers are apprentices. There are four instructors to about 1000 apprentices, who are put through the tool, die making, or the machine tool repair work. The attendance in the class room work is over 98 per cent. For the first year the apprentices are given a minimum factory wage, and they are under instruction for three years and each year are given an increase in wages. There is a large waiting list. For admission the educational requirement is equivalent to the eighth grade of public school work.

The third school which the Ford company established was the Henry Ford Trade School, in which six boys entered four years ago. The applicants are dependent on themselves and are accordingly given a cash scholarship. One week of academic studies is alternated with two weeks of shop work. The boys apply in person or by mail; they must be 12 to 15 years of age and live in Detroit. There are now 325 boys in the school, of an average of 15½ years, and 1500 are on the waiting list. Of the total, 80 per cent are dependent financially and 70 per cent are fatherless. They are given \$450 a year payable semi-monthly, on the fifth and twentieth of each month. They are given three weeks' vacation in the summer. If their record is good the payment is increased to \$475, and then \$25 per annum until the income reaches \$900. They are engaged until 3.30 every afternoon except Saturday, when 11.30 is the quitting time. The school is operated as a private institution, and not for profit. The instructors are drawn chiefly from the factory and are men who know tool making. The output of the factory, that is the output from the 200 at work in the factory at any one time, supports practically the entire number of 325. In other words, about \$35,000 worth of supplies are sold monthly to the Ford company, which if bought elsewhere would cost, it is estimated, \$50,000. Very little of the output needs to be scrapped, no more so than in the main shop, possibly 2 per cent. An athletic field provides for one hour's daily recreation. At 18 years of age these boys are entering the Ford plant. The turnover, Mr. Searle emphasized, has been very little; the school starting with six has had a total enrollment of 585 and has passed through in the four years 315.

Another training school which the Ford company has established was started to secure satisfaction in service plants throughout the country. Accordingly, every day five men are admitted from Ford company dealers and are given five weeks' intensive training in repair work, all in one building set apart for the purpose. The 125 men in all receive a minimum wage and are not a dead expense, because of the useful work on which they are put for the upkeep of Ford cars locally. They are brought into a lecture room in groups, and altogether 3000 men have been put through this school since its start.

A fifth school is included in the Ford plans. It is the Ford Institute of Technology, to bring into the company and train men for engineering and executive positions. This school is for young men who give promise of leadership. Mechanical, electrical and chemical engineering are the subjects taken up. It was planned to open this school this fall, but it was not done because of the present labor situation. A selection of 90 has already been made for the freshman class, and there are over 1000 applicants. The course of study provides for two weeks of shop work and then two weeks of

class room work. The laboratories will be the Ford Motor Co. The average age of those who have accepted is over 22 years.

Unappreciated Importance of the Foreman

John Calder, director of industrial relations, Swift & Co., Chicago, contributed to the discussion in writing. According to the last published census of manufactures a little more than one-half of all our industrial workers, he pointed out, is engaged in 270,000 establishments forming 98 per cent of our plants, and these employ one to 250, or 14 persons on an average. The remainder, a little less than half our workers, is employed in 5104 places, or only 2 per cent of all our plants. Of these 3000 run from 250 to 500 and 1400 from 500 to 1000 persons. Only 648 plants run over 1000 employees each and form what we term "big business." Fully half our foremen, assistants, inspectors, superintendents and managers or about 40,000 persons, and somewhat less than half of our industrial activities and services are carried on in small establishments, and yet little use is made by small proprietors of their advantages in maintaining close and satisfactory relations with labor.

The other half of our foremen and minor executives, numbering over 300,000 persons, in relatively large establishments, is often far removed from any real contact with their concern's policies and ideals. Wherever you find a proprietor of liberal views and energy you usually find him successfully multiplying himself through his foreman. It is the duty of the employer to study the mental content of his foremen, to sell his policies thoroughly to his supervisors. The workman in the last analysis cannot get any better idea of a management or an institution than is furnished by the foreman with whom he spends nearly all of his working hours. The foreman must be told much more about his concern and what it stands for than he is now. We must cease regarding the foreman as a policeman and must aid him to fit himself for man building. We are running industry to-day with nearly 800,000 foremen, assistant foremen, inspectors, superintendents and managers between 22 and 65 years of age. It is their traits of mind and character which will determine the issue.

Daniel Bloomfield, of Bloomfield's Labor Digest, Boston, also contended that "One cannot overestimate the training value of contacts for foremen with men high in the management, especially those which are close and frequent." Training must be systematic; a lecture now and then is not sufficient. Mr. Bloomfield briefly outlined the course of instruction for foremen provided by the International Harvester Co. The course includes the visits by the foremen of one plant to other plants of the company. The topics covered in the course include economics of business, shop practice, industrial relations and popular subjects. "No training plan will be complete unless it gives the foreman or the prospective foreman an understanding of the principles of economics that govern industry to-day."

The banquet of the society was presided over by the president of the society, L. W. Wallace, at one time a professor at Purdue University, later identified with the Diamond Chain & Mfg. Co., Indianapolis, and now director of the Red Cross Institute for the Blind, Baltimore. He told of the beginnings of the society when it was brought into being as a means for supplying the country with management personnel after the United States entered the war, and he outlined how its policy had ever since been one of service to industry. He also told of the work of educating blinded soldiers and of the method of installing each of them in gainful occupations.

The speakers included Dr. Gilbreth, who was asked to respond to the subject of new factors in industrial education. He had provided a formal paper, but spoke independently of it. He dwelt on what he called the great movement of the recognition of the worker and of the aim of the wage earner to have a hand in management. It was a commentary on the situation, he said, that the Society of Industrial Engineers and organizations like the American Society of Mechanical Engineers were taking a hand in industrial relations

questions. He also dwelt on the increasing insistence on the part of everyone on securing specific intensive education, but he said, "You still permit the average mechanic to teach the average apprentice. This would be a joke if it were not a tragedy. It is ridiculous not to pick out the best men for the instructing." He had something to say on the scientific selection of the worker for the work place and the need of motivation in securing concentrated if not enthusiastic application to the day's work. The one best way to do work—the Gilbreth slogan—was suggested as capable of understanding even by the child, who may be made to think in motion economy.

One Hundred Years of Accumulated Negligence

An illuminating address on the wastes in national Government through the little appreciated duplication of efforts and division of responsibility in the executive ends of the Government was made by M. O. Leighton, chairman of the National Public Works Department Association, Washington. He had drawn from the records of expenditures in a way that enlivened his statistics and pointed out the ridiculous situation wherein several different departments compete in construction work, in road building and in countless other ways. The speaker aroused the banqueters to such an extent that it was voted that the president appoint a committee to do what it could to help bring about the desirable change in the Government regime. Mr. Leighton, in emphasizing that the conditions are of long standing, quoted Herbert Hoover as saying that the Government is "woefully inefficient through 100 years of accumulated negligence."

Adverse criticism of the business man was made by another speaker, F. W. Thomas, of the Great Lakes Trust Co., Chicago. Too many manufacturers, in his opinion, become obsessed with a belief in their success, overlooking the recent situation of a seller's market in which no one seemed to care what he paid for materials or labor. As a result there has been an undue expansion, and now we must go back to old-time conditions of a survival of the fittest and a weeding out of the weak. He considered that the average business man does not think his problem clear through, that he should never leave the hiatus which he commonly does between the point to which he arrives after careful scrutiny and the conclusion to which he recklessly jumps.

Wages and Production in Europe

An insight on European conditions was contributed by Dwight T. Farnham, of St. Louis, who recently returned from a five months' investigation in Great Britain, France, Italy and Germany. He told of management and welfare conditions in these countries, mentioning numbers of the conspicuous plants of Europe, such as Ansaldo & Co., Genoa; Le Creusot works of Schneider & Co.; the Edgar Allen steel plant in England, the Allgemeine Electricitäts Gesellschaft in Berlin and Ludwig Loewe & Co., Berlin. The burden of his talk was that one must not overlook the chance of European manufacturing companies' entering international markets in a lively fashion. At a time when mechanics were being paid \$45 weekly in the United States, like wages in Germany were 360 marks (\$4.68), in Italy 150 liras (\$5.47), in France 132 francs (\$8.31) and in England 85s. (\$14.70).

However, before the war there was one workman to one automatic machine in England, while in the war one woman took care of four automatic machines, and it now appears that one man and an apprentice will take care of six automatic machines. In Italy one operator per machine is the rule, although there are instances of one for two automatic machines. In Germany in the war period there was one man to three or four automatic machines, but since the revolution one man per machine. In France the rule is one man to two or three machines. All these are comparable to one man in the United States for four to six automatic machines. In passing, he said that the safety idea is not thoroughly sold in England. He was greatly impressed with the arrangement of radiating tracks in the circle of buildings forming the Edgar Allen steel plant with its minimizing of the backtracking of material, an arrangement

which, it is said, was rehearsed before construction was authorized.

Officers Elected

Mr. Wallace was re-elected president. J. F. Price, Brown Hoisting Machinery Co., Cleveland, was elected vice-president in charge of finance; Prof. Edward J. Kunze, Pennsylvania State College, State College, Pa., was elected vice-president in charge of research, and Edward L. Ryerson, Jr., Joseph T. Ryerson & Son, Chi-

cago, was elected secretary. Dwight T. Farnham was re-elected vice-president in charge of education and Irving A. Berndt was re-elected vice-president in charge of promotion. F. C. Schwedtmann, vice-president National City Bank, New York, was re-elected treasurer. Two new directors were added to fill vacancies, Professor Kunze and Clinton H. Scovell, Scovell, Wellington & Co., Boston. The next meeting of the society will be held in April, and perhaps in Milwaukee.

New Reading Schedule of Extras

The Reading Iron Co., Reading, Pa., has adopted a new schedule of extras on cut nails. This new card raises the extras where previously the old card had shown that the nails were being produced at a loss

Schedule of Extras

Common, Hookhead, Foundry, Warehouse, Fence, Shingle		STANDARD LENGTHS OF NAILS	Barrel, Roofing, Cooper, Cement, Cottage	
Extra	Extra		Extra	Extra
2d, \$1.45	9d, \$.30		$\frac{3}{4}$ in., \$1.90	$1\frac{1}{4}$ in., \$1.15
3d, 1.15	10d, .20		$\frac{7}{8}$ " 1.55	$1\frac{3}{8}$ " .85
3 $\frac{1}{2}$ d, 1.00	12d, .15		1 " 1.45	$1\frac{1}{2}$ " .80
4d, .80	16d, .10			
4 $\frac{1}{2}$ d, .80	20d, Base		Fine Nails	
5d, .75	30d, Base		Extra	Extra
6d, .60	40d, Base		2d, \$1.95	4d, \$1.05
7d, .55	50d, Base		3d, 1.35	
8d, .30	60d, Base			
70d and up, .10 extra			Slatting	
			Extra	Extra
Casing, Box, Flooring, Ceiling, Finishing (New York Pattern)			3d, \$.95	5d, \$.75
Extra	Extra		4d, .85	6d, .65
2d, \$2.00	9d, \$.60		Cinch, Car, Boat, Chute, Clout, Hoop, and Hinge	
3d, 1.55	10d, .45		Extra	Extra
4d, 1.25	12d, .40		2d, \$1.55	8d, \$.55
5d, 1.20	16d, .25		3d, 1.15	9d, .55
6d, 1.00	20d, .15		4d, .95	10d, .45
7d, .70	30d, .15		5d, .90	12d, .40
8d, .60	40d, .15		6d, .75	16d, .35
			7d, .70	20d & up, .30
Fine Finishing			Note: .25 extra per 100 lb. for annealing	
Extra	Extra		Swedes	
4d, \$1.40	8d, \$.70		Extra	Extra
5d, 1.35	9d, .70		3 $\frac{1}{2}$ d, \$1.40	4d, \$1.05
6d, 1.10	10d, .55		Each half keg, .20 extra. Extra charge for packing other than standard weight quoted upon application.	
7d, .80				
Cut Spikes and Sheathing All sizes, .10 extra				

or that the company were about breaking even. The new card raises extras from 5c. to 90c. per 100 lb. from those of the old card. The new schedule, which is dated Oct. 15, is published herewith.

Mechanical Engineers' Annual Meeting

Following is a summary of some of the papers to be presented before the annual meeting in New York, Dec. 7 to 10, of the American Society of Mechanical Engineers:

The \$20,000,000 naval ordnance plant at South Charleston, W. Va., will be described by Roger M. Freeman, Providence, R. I., who was supervising engineer. He will cover the layout of the plant, the arrangement of machinery and furnaces for the manufacture of armor plate and gun forgings and a new type of forge building.

The machine shop session will be given over to the presentation of three papers. Earle Buckingham, Pratt & Whitney Co., will present the results of a mathematical investigation on the side cutting action of a hob when milling threads. W. H. Chapman, Norton Grinding Co., will record new developments in grinding practice. Joseph F. Keller, general manager Keller Mechanical Engraving Co., Brooklyn, N. Y., will present a modern slide lecture giving important information concerning a new die sinking mechanism which he developed.

The newly formed management section will devote a session to a consideration of the life and work of Henry

L. Gantt to point out the present need of applying Mr. Gantt's principles to the problems of industry to-day.

Lambert T. Ericson, Toledo, Ohio, will discuss the problems of constructing creosoted wood-block factory floors, taking up the character of timber, the need for solid foundations and water-proof binders, the field for floors of this type and the need for expert supervision in installing wood-block floors.

Louis Illmer, oil engine expert, Southwark Foundry & Machine Co., in a paper entitled, "Disastrous Experiences with Large Center-Crank Shafts," will point out the essential principles to be followed in the design of this type of shaft.

N. W. Akimoff, manufacturer of balancing machinery, Philadelphia, will present an entirely new point of view on the design of foundations for machinery.

Prof. E. O. Waters, Sheffield Scientific School, Yale University, has worked out in a paper, formulas for the rational design of hoisting drums.

R. E. Doherty and R. F. Franklin, General Electric Co., will present a paper on flywheels for reciprocating machinery connected to generators and motors.

A session on fuels will include a paper on "Distillation of Fuels Applied to Coal and Lignite," by O. P. Hood, chief mechanical engineer of the U. S. Bureau of Mines.

Loan to Southern Pacific Denied

WASHINGTON, Nov. 16.—The Southern Pacific is the first large railroad to be denied a loan from the Government's revolving fund. The Interstate Commerce Commission in refusing the application of the road for a loan of \$5,028,000 to aid in the purchase of new equipment held that the showing of the company as to its inability to get money from other sources was "not convincing." The commission did not pass on the question of whether the purposes for which the money was to be used were justifiable or not, but merely took the position that it had not been shown that the road could not finance its needs through the banks.

The Southern Pacific planned to buy new equipment costing \$17,232,600, of which \$12,204,600 was to be financed by the company and the balance to come from the Government revolving fund.

The commission originally certified loans on the ground that they could not be obtained elsewhere except at "excessive rates of interest." Following the ruling of the Treasury Department that this was not in accord with the terms of the Transportation Act, which stipulates that a carrier obtaining a loan must do so solely for the reason that the carrier cannot get it from any other source, the commission changed the form of approval.

Hog Island Bid Requested

WASHINGTON, Nov. 16.—The Shipping Board has rejected a bid of \$10,000,000 for the Hog Island shipyard. The bid was presented by the Barde Steel Products Corporation, New York, which proposed to sell the materials at the yard and to put a portion of the plant in shape to be offered for use as a steamship and railroad terminal. The Barde company previously made a bid of \$4,000,000, which also was rejected. The Barde company is already handling surplus steel for the Shipping Board, having recently closed a contract for the \$15,000,000 worth on the Pacific Coast and having purchased the surplus steel at Eastern yards several months ago.

Labor Unions Proceeding with Caution

Radicals Succeeded by More Conservative Leaders
and Attempt to Unionize the Steel Industry Will
Not Be Made Soon—Will Fight Open Shop

WASHINGTON, Nov. 16.—When THE IRON AGE exposed the radical views of William Z. Foster and John Fitzpatrick on the eve of last year's steel strike, it pointed out the perils of such leadership and the labor leaders of the country are now adopting a more conservative policy. The failure of the steel strike was a disaster, not only to the strikers themselves but to the whole cause of organized labor, and the leaders of the unions have just taken steps to put a different kind of men in charge.

The presidents of the 24 unions interested in the steel industry met last week in the offices of the American Federation of Labor here and elected Michael F. Tighe, president of the Amalgamated Association of Iron, Steel and Tin Workers, chairman of the committee which is to undertake the organization of the steel workers next year if conditions are favorable. John Tierney, also a practical steel worker, was elected secretary.

By the time the United States Senate began its investigations of the strike, Fitzpatrick and Foster had committed the labor unions so deeply to their radical plans that Mr. Tighe and President Samuel Gompers of the American Federation of Labor gave public approval to both of these radicals, for fear of compromising the strike. Fitzpatrick and Foster made the most of these endorsements, but their strike collapsed. Now both of them have been ostracized from the move-

ment and neither they nor their immediate following will have anything to do with next year's organization plans.

Even at that, the time for a resumption of unionizing the steel industry seems remote. The 24 international union presidents agreed that nothing could be done just now because of the general slowing up in the steel industry. They decided that with the blowing out of furnaces and the increasing idleness in steel centers, an active unionization campaign would only injure the workers. The executive council of the American Federation of Labor, which has been in session here for some time, has taken the same view. As a result, the Tighe committee is scheduled to meet again Jan. 15 to see whether the time then will be more propitious. It is exceedingly doubtful, however, whether any active steps will be taken before spring, if then. No one at the meeting ever mentioned the possibility of a strike.

The executive council also took up the question raised by the growing campaign for the "open shop." The American Federation of Labor has been visibly aroused by the reports of the "open shop" campaign and the executive council determined to use its fullest powers to fight that issue. It even discussed the advisability of calling a special conference of the 120 union heads who comprise the federation in the effort to crystallize the opposition to the open shop propaganda.

Home-Owning Best Antidote for Radicalism

"HOME-OWNING in this country is the best antidote for Bolshevism," said Senator W. S. Kenyon, a member of the United States Senate Committee on Reconstruction, in addressing a luncheon of the Chicago Association of Commerce on the reasons for hearings held in that city on Nov. 10 and 11. "The problem of the housing situation," he said, "is one of the most fundamental things to be considered. It goes further than the mere erection of buildings. It goes to the development of American stability and American patriotism. In all the murmurings of Bolshevism that you hear now and then, which I think are somewhat exaggerated, you will never hear any such murmur from the man who owns his own home."

"We are here to-day not to offer suggestions to you as to what would relieve the situation, but rather to ascertain the conditions of the housing industry here and with that and the information which we are obtaining throughout the country, conclude finally what, if anything, Congress should do to encourage the re-awakening of this great industry," declared Senator William M. Calder, chairman of the reconstruction committee, in an address at the same luncheon. "During the war, Congress, or at least the Government, established many restrictions which tended to hamper the building of homes. The Government itself, therefore, was responsible to a very large degree for the cessation of building, housing particularly, during the war."

"The figures from your own building commissioners' report show that while in 1916, the pre-war year, you built in Chicago something like 4293 dwellings, in 1917, the first year of the war, you built 1174, and in the second year of the war, 326. There was a recovery in 1919, so that in that year you built 457, but in 1920, including estimates for the next two months, the total building of dwellings will not exceed 90, which is, all told, for the years 1917, 1918, 1919 and 1920, a total of something like 2047, as against 4293 in the one pre-war year."

The degree in which the housing problem is involved with other economic factors such as the questions of finance, transportation, materials and labor, was outlined in Senator Calder's address which opened the hearings of his committee in Chicago.

Cost-Plus System an Evil

Among those who appeared before the committee were representatives of labor, bankers, builders, sellers of materials and railroad officers. "The cost-plus system has acted as a poison to both the contractor and the laboring man," said Edward Hines, president Hines Lumber Co., Chicago. "It has removed the stimulus of competition and has fostered carelessness. I have not been able to see, as yet, any place where the efficiency of labor has been increased. As a result of the cost-plus system men would be idle on working days and would work Sundays so as to get double pay."

On the same subject, Charles Bostrom, building commissioner of Chicago, said: "There has been a lack of good judgment all along the line. We must have fair and square dealings among ourselves. A fundamental trouble has been greed—greed on the one hand, and thoughtlessness on the other. It does not seem to me that we can put a finger on the one man who is to blame; it is a sort of endless chain that involves almost everything we touch."

Increase in Material Costs Great

Henry G. Zander, a large builder, charged that combinations in restraint of trade were responsible for increases in material costs. He presented figures on the cost of building in pre-war times, during the war, and at present. He explained that the figures represented the cost of a standard six-room brick bungalow. "Disregarding overhead expenses and profits," said Mr. Zander, "we put up these buildings in 1916 at \$3,042 each. In the fall of 1918 we put up another group of six of the same buildings and they cost \$4,512, everything being identical with the first ones. We have

recently finished another group of the same buildings and they cost \$7,000. These last buildings have not been sold. The prices are too high. People cannot afford to put up buildings at such prices, nor can they afford to buy them after they are put up. We would have to sell now at \$8,000 or more to get out even. That is too much. The majority of those who buy these homes are workmen and prices are clear beyond their reach."

Chicago Housing Conditions Bad

The congestion resulting from the lack of housing facilities was pointed out by B. J. Rosenthal, managing director Chicago Housing Association. He told of one block on Maxwell Street, Chicago, where the average is 17 individuals in a house intended for one family. He cited 76 houses which contained 1334 families. Of the 20,000 children who have been brought before the juvenile court during the last year, he asserted, many were victims of conditions under which they lived. Much of the crime in Chicago, he charged, is due to vicious housing conditions. The young men cannot stay in their rooms, where there are nothing but beds, and they go out to the streets.

Big Money Goes Into Tax-Exempt Securities

Large sums have been withdrawn from the real estate mortgage market because real estate loans cannot compete under the laws of Illinois with offerings made by public utilities and other investments, said Wyllys W. Bairs, president Chicago Association of Commerce. He also stated that one large investor told him that he would have to have as high as 17 per cent on a real estate loan to enable him to make as much as he could obtain through the medium of tax exempt securities.

"Under the present strained conditions of finance and credit, it does not seem to me desirable for the banks artificially to promote building by offering preferential rates on mortgage loans," said James B. Forgan, chairman board of directors, First National Bank, Chicago. "Such action would tend to stabilize present costs of building construction, now at their highest peak. Readjustments of prices are necessary in all lines and there seems no good reason why the cost of construction should not come down. As soon as building costs are adjusted, so that there is a reasonable prospective profit in completed construction, the building business will be revived and there will be no difficulty, in my judgment, in finding money to take care of it."

Right to Sue a Labor Union

WASHINGTON, Nov. 16.—The Bureau of Labor Statistics has reprinted some of the details of an interesting decision of the Supreme Court of New Jersey upholding the right of a workman to sue a labor union on a complaint that it had procured his discharge and had prevented his re-employment. The case (*Malone vs. Brotherhood of Locomotive Firemen and Engineers*, 110 Atl. 696) was based on a charge "that for two or three years past the union had unlawfully and without justifiable cause coerced, threatened, persuaded, enticed and induced employers or would-be employers either to discharge him or to refuse employment, such acts being the result of a conspiracy which has resulted in his damage to the amount of \$20,000."

The brotherhood raised various objections, but the court found that so far as the form was concerned the complaint was good and properly drawn. Another objection raised was that in so much as the dismissal was made during Government control of the railroads, Malone might carry his appeal under the regulations in force with the probability of ultimate restoration to the place from which he had been discharged. On this the court said:

"The argument is that because plaintiff has this appeal it is his duty, even as respects these defendants, to prosecute that appeal and let them, in the meantime, at least, go free of liability for the malicious conspiracy against him. We are unable to see that the existence of this right in the plaintiff is to bar

him from asserting what we deem to be a clear common-law right of action for damages. We are not told by counsel what is to become of the plaintiff's wages that he may have lost in the meantime, nor are we advised why the defendants are to be exempt from suit while the plaintiff strives for reinstatement. If they are exempt now, it would seem that they would be exempt in resisting the plaintiff's reinstatement at every step. Such a proposition shocks the most elementary sense of justice."

The case was before the court on a motion to strike out the complaint, which was denied in accordance with the above principles, thus leaving the matter open for further action by the plaintiff.

Will Investigate Conditions

Governor Ritchie of Maryland has appointed several commissions to investigate various industrial conditions of the State and report with recommendations to the next session of the Maryland General Assembly. One is the Industrial and Welfare Commission, which will investigate with the view of bringing about more harmonious relations between employer and employee. It consists of John K. Shaw, Baltimore, representing the general public; J. Sloan Hoskins, representing the merchants; Eli Strouse, representing the manufacturers; Frank Novak, representing the contractors, and Henry F. Broening, Baltimore, president of the Baltimore Federation of Labor, representing labor.

Another commission will study mining conditions in the State and recommend a code of mining laws. This body consists of G. Marshall Gillett, Frostburg, representing the operators; William J. Trickett, Cumberland, representing the miners, and William Milnes Maloy, chairman of the Maryland Public Service Commission, representing the public.

What Is a Strike?

Pennsylvania iron and steel manufacturers are interested in a committee authorized by the State Industrial Board to define what shall constitute a strike in Pennsylvania industry. James C. Cronin and Otto C. Mallory, members of the board; R. J. Peters, chief of the State employment bureaus; S. S. Riddle, chief of rehabilitation, and William J. Tracy, chief of mediation, have been named as advisors of the proposed committee. These organizations have been asked to name members to serve with three to be named by the Commissioner of Labor and Industry; State Chamber of Commerce; State Federation of Labor, Philadelphia and Pittsburgh labor union councils, and the Philadelphia and Pittsburgh branches of the Pennsylvania Manufacturers' Association.

Labor Leaders Arrested

Two former officials of the Cincinnati Lodge of the International Association of Machinists, were arrested recently on charges of embezzling funds amounting to over \$13,000. The affidavits in both cases were signed by Business Agent Haering. The accused men deny the charges, stating that the money which they are accused of taking had been paid out to what they termed "sluggers" imported during the recent strike. Some interesting revelations are promised when the case comes to trial. When the machinists' strike collapsed some weeks ago, rumors were current that something definite was about to break, but it was not until an auditor from international headquarters had gone over the books that the shortages were discovered.

There were 78 strikes in the metal trades in Pennsylvania during the first nine months of the year, according to figures announced by the State Department of Labor and Industry. This report of the department shows that the estimated loss in wages to workmen of Pennsylvania during the first nine months of the year from strikes of all kinds was \$5,409,000. It shows that 427 industrial disputes occurred, in which 43,511 men and 5515 women figured.

Study Professional Side of Labor Problem

Industry's Relations with Engineers in Its Employ as Important as Those with Craftsmen — Danger of Specialization

THE status of the engineer in employment came in for attention at a conference of the American Association of Engineers which met to discuss employment and education at the Congress Hotel, Chicago, on Nov. 12. The question was not considered from the point of view of compensation but with a view to improving the methods of training the engineer and finding for him a position which suits his qualifications. The educational policies of technical schools were examined, the merits of various types of employment bureaus were discussed, and the duty of the employer was outlined with particular reference to the methods used in selecting new talent.

The complex civilization of modern times has resulted in a great diversity of industry and a concomitant specialization of labor, said L. K. Sherman, president of the association in the address of welcome. This condition, he pointed out, has made it increasingly difficult for men to secure new employment when through a change in the industrial situation they are deprived of the position for which they are specially trained. Lack of constructive thought and vision in connection with this question is responsible for much idleness, discouragement and bitterness which have made men turn at times to the hope of continuous employment offered by socialism, Bolshevism and other "isms." In Mr. Sherman's opinion however, the problem is not incapable of solution and the great economic waste resulting from the time lost between periods of employment can be avoided.

Criticizes Specialization in Education

"A century ago a man in any branch of the engineering profession was identified simply as an engineer," said William E. Vogelback of the staff of Sanderson & Porter, engineers, Chicago, in an address before the meeting. "Fifty years ago, he was a civil or mechanical or electrical engineer, while to-day these latter terms give but a vague idea of his qualifications or his occupation. Specialization finds its way into all industries and professions, subdividing single occupations into many and confining the individual more and more to specific tasks.

"There is an evil here to the detriment of the individual as well as to the profession. . . . Few men are possessed of the ability to analyze complete problems, to see the relation between the problem in its entirety and any, or all, of its component factors. Specialization does not assist in turning out leaders of men, but on the contrary, materially assists in their suppression and hence we must look elsewhere for the forces which tend to preserve the balance. These forces will be found in our educational institutions and our professional societies. . . .

"In the short space of the usual college course to-day, it is not expected that colleges will turn out men fully equipped for their professional practice. The aim should rather be to inculcate a method of logical reasoning, to turn out analytical thinkers. . . . Too many men just out of colleges come better equipped with a collection of facts than with methods of analysis."

Mr. Vogelback thought it significant that so many successful men are recruited from small communities rather than from large cities. The reason for this, he stated, is to be found in a greater ratio of practical learning to the degree of specialization. "In the smaller towns, industry is centralized and extensive specialization is not expedient. Here the young man entering business sees the small shoe manufacturing industry or the printing industry in its entirety. He sees the relation between the different departments and the whole

plant. With the whole mechanism under one roof, so to speak, his view is comprehensive." The big problem of the day, in Mr. Vogelback's estimation, is how to stem the trend of specialization which relegates the individual to routine duties and makes of him a mere cog in the great wheels of industry.

Engineering firms are surfeited with specialists, but are cruelly short of men with a broad grasp of engineering, said Cecil F. Elmes, Sanderson & Porter, in commenting on Mr. Vogelback's address. The responsibility, he asserted, lies with our educational institutions.

In reply to Mr. Elmes, A. A. Potter, dean of engineering, Purdue University, stated that engineering faculties were in accord with Mr. Elmes and that the tendency of the day is away from specialization in education; yet schools are confronted at all times with pressure on the part of alumni and certain industries to develop specialists and that college trustees see fit to respond to that pressure, at least in some measure.

Service of a College Employment Bureau

The reduction of unemployment in the engineering profession, and for that matter in any vocation, means bringing the man and the job together and, if permanent results are desired, this implies finding the right job for the right man. What a great college is doing in its efforts to place its graduates in their first positions was outlined by A. B. Crawford, director Bureau of Appointments, Yale University. Those desiring to use the service of the bureau, he said, are first asked to check from a comprehensive list those vocations in which they have a positive interest. Then a discussion of the merits and demerits of each usually cuts the selection in half. This selection is then carefully considered with relation to business conditions and a survey of the industrial demand, and is further reduced. Finally arrangements are made for an exchange of letters and interviews between the applicants and the employers in the chosen field.

The bureau, he said, is in touch with over 2000 large business organizations having a need for men. Frequently representatives of various businesses address the students and give them the better opportunity to ascertain the character of positions offered. The emissaries from industry, on the other hand, are given an opportunity to interview candidates and are advised by the bureau of the scholastic record of each, as well as his various characteristics and capabilities as judged by those who have given him instruction. At the same time, the bureau is careful to give the student a frank opinion on the reputation of the company which seeks his services. It is the aim of the bureau to serve the interests of both the graduate and the employer, realizing that the failure of one man, who has been placed by the agency, will prove more harmful to its reputation than the good record of ten is helpful. The bureau also acts as an employment agency for older graduates.

Qualifications Which Appeal to Employer

In any discussion of the problem of bringing the man and the job together, the qualifications considered important by the employer are of prime significance. What an employer wants when he engages an engineer was outlined in an address by Frank D. Chase, president Frank D. Chase, Inc., industrial engineer, Chicago. "The employer," he said, "divides his resources into material and labor. Material in any form whatever is represented by capital or represents capital. . . . It is quite true that the banker looks at the physical inventory when making his loan, but it is also true

that without the consideration of labor or personnel, the inventory does not go very far with the banker, nor does it go very far with the average business man; in other words, the labor or personnel of an establishment is quite as important as the material element and frequently far exceeds it in importance. The employer who does not formulate a very definite plan of employment is making a very serious mistake.

In listing the qualifications essential in an engineer, Mr. Chase placed loyalty first. This word, he said, is susceptible of a broad interpretation and this is the interpretation he has put upon it. Loyalty means loyalty or honesty of conviction or purpose, first, to one's self. If one is loyal to his own conviction of right, he is loyal to his employer. Loyalty to one's self and one's employer means honest work and its reward, promotion, increase of responsibility and salary—and the men who have the ambition to obtain these are the men engineering firms are looking for.

Second in importance in Mr. Chase's estimation is personality. This term is rather difficult to define, but roughly means the expression outwardly of one's self. "We speak of an agreeable, a strong, dominant or compelling, or an intelligent personality. All the knowledge in the world is of no avail if one cannot apply it and use it for the benefit of those with whom he is paid to work. . . . A man's personality is reflected by his every act and speech, oral or written, and therefore can be observed at any and all times and easily studied during an interview." In judging a man's personality, he said in effect, one notes both his physical and mental qualifications. "Physical qualifications should include good health, which is reflected by an upright alert bearing, and personal appearance, as indicated by clothing and the way it is worn; in other words, there is no excuse for a man who calls himself an engineer, unless he is wearing field clothes, to wear other than neatly pressed clothing, together with clean linen and shined shoes. It is true that the genius sometimes forgets to shave and wash and that the old adage says that a man must not be judged by his clothes, . . . but in 99 times out of 100 a man's physical appearance does indicate in great measure his mental characteristics."

A man's mental attitude, he stated, is reflected in part by the style of his greeting, which will indicate his ability of presentation. Characteristics which may be noted are aggressiveness tempered by good taste or greeting, straightforwardness, or clear or logical thinking, which is exhibited by the applicant's ability to state his case briefly and without undue loquacity.

Third in importance in a man's qualifications is his experience, said Mr. Chase. Although without experience loyalty and personality are without value, mere experience is a drug on the market. It takes more than mere technical knowledge to earn the title of engineer. For a given position, however, certain experience is essential and it is ordinarily an easy matter to determine whether or not an applicant fits so far as experience goes.

Education Mr. Chase placed last among the qualifications. It is not what a man has learned, he said, but what he knows and his ability to apply his knowledge that counts. Application, he asserted, implied the knowledge of where to find specific data—something which is more important than burdening the mind with masses of statistics which cannot be relied upon.

The qualifications mentioned, he stated, are all susceptible of record and many corporations are giving careful study and analysis to men whom they employ. The records they prepare are used not merely as an entrance requirement, but are the basis of transfer and promotion.

In discussing Mr. Chase's address, J. H. Libberton, manager service bureau, Universal Portland Cement Co., expressed the opinion that it was preferable that two or three people interview the applicant rather than one, to minimize the danger of a personal whim or an ill-founded prejudice influencing one's judgment of a man. He also stated that too much emphasis should not be placed upon personal appearance and cited a

number of instances in his own experience which indicated that many a diamond was found in the rough. In his estimation one of the prime qualifications of an engineer should be the ability to observe. The applicant should be asked intimate questions about his former position as a test of his powers of observation. Often questions regarding commonplace things outside the engineer's particular field prove an excellent gage of a man's ability in this direction. For example, a prominent Chicago architect in interviewing candidates for a certain position asked them to tell him the principal components of paint and galvanized iron.

Bank Clearings and Building in Detroit

DETROIT, Nov. 13.—The increase in Detroit bank clearings for the first six months of this year was 58 per cent as compared with the corresponding period in 1919. In the next three months it was 36 per cent, and in October a little less than 10 per cent. In New York during the latter month there was an actual falling off of about 15 per cent, in Boston 10 per cent, in Kansas City 20 per cent. In Chicago the increase was only 2/10 of one per cent; in Cleveland it was 11 per cent and in Philadelphia two per cent.

In building construction for the nine months ending Sept. 30, Detroit was a close rival of Chicago for second place, the estimated cost for Chicago being \$66,438,500 and for Detroit \$64,935,968. The total of building permits for factory and warehouse construction in Detroit for the 10 months of this year was about \$16,000,000, which is almost up to last year's figure. Notwithstanding a falling off in building permits for the last two months, the total for the year to date, including all classes of building construction, is greater than in 1919. The total for the first 10 months of that year was \$68,308,941, while this year it was \$71,773,550.

Engineers Visit Boiler Plant

The Engineering Society of Western Massachusetts was the guest of the H. B. Smith Co., Westfield, Mass., at the November meeting on Nov. 11. During the afternoon the members visited the plant where the manufacture of boilers and radiators was explained. Several of the company's new products were exhibited, including a smokeless boiler designed for soft coal. C. C. Chesney, president, presided at the society dinner in the evening, at which Prof. Lester P. Breckenridge, mechanical engineering department, Yale University, gave an illustrated address on the "Evolution of the Cast Iron Heating Boiler as related to the Present Problem of Power and Fuel."

Connellsville Coke Conditions

UNIONTOWN, PA., Nov. 15.—A slightly firmer tone was apparent this week in the coke market, although quotations for the week average around \$8, some sales having been reported at a slightly lower figure. Coal quotations during the week averaged from \$4.75 to \$5.25 for all grades, although some inferior grades may have been sold at a lower figure.

Production dropped slightly during the week just closed due to several causes, but was still maintained above the 200,000-ton mark. The situation in the region is one largely of marking time pending the final readjustment of market conditions.

The Emerson-Brantingham Co., manufacturer of farm machinery, states that the report that its foundry at Waynesboro, Pa., has been closed indefinitely is incorrect, as the foundry has not been closed during the past several months except for a period of three days. The present plans of the company are to maintain operation uninterruptedly. The regular force is at work at the foundry.

Thomas Smith Co., bolts, Worcester, Mass., located at 11-13 Cypress Street for 65 years, has now removed to its own building, at 288 Grove Street, near Brookfield Street.

Rehearing of the Pittsburgh Basing Case

Steel Corporation Vigorously Attacked by Lawyers
for Complainants Before Federal Trade Commission
—Counsel for Steel Companies Will Next Be Heard

WASHINGTON, Nov. 16.—Rehearing of the case involving the "Pittsburgh Plus" system of basing steel prices was begun before the Federal Trade Commission this week. The Western Association of Rolled Steel Consumers, the applicant for the issuance of a complaint against the United States Steel Corporation and other producers of rolled steel, was given three days to present its case. Supporting this association in its stand were the Southern Association of Rolled Steel Consumers, commercial organizations of Duluth, Minn.; Superior, Wis., and Birmingham, Ala., and the State of Minnesota through its attorney general. Following the conclusion of the arguments on behalf of the applicants, adjournment was to be taken until either next week or the following week at which time counsel for the steel producers will have three days in which to defend the Pittsburgh basing system and show cause why the commission should not attempt to tear down the practice built up during a period of many years.

Four Hearing the Case

Four members of the commission are hearing the case. Two of them, Commissioners Murdock and Gaskill, held at the time of the previous decision that the evidence presented did not warrant the issuance of a complaint. The other two, Commissioners Thompson and Pollard, presented the minority report, the latter not having participated in the original hearings and desiring additional information. The other member, who joined with Commissioners Murdock and Gaskill in dismissing the application, former Commissioner Colver, retired from the commission a few weeks ago and his place is now vacant. With the present commission arrayed two and two, so far as their past judgment is concerned, a majority decision one way or the other requires a change in the view of at least one member.

H. G. Pickering of Superior, Wis., who appeared in the original hearings on behalf of the Superior Commercial Club, acted as chief counsel for the Western Association of Rolled Steel Consumers in the presentation of its case this week, having been selected for this duty during the absence in Europe of John S. Miller of Chicago, who represented the association at previous hearings.

Mr. Pickering occupied the entire day on Monday and a considerable part of Tuesday's hearing. He was followed by Elliott Cheatham of Atlanta, Ga., and Birmingham, Ala., attorney for the Southern Association of Rolled Steel Consumers.

Attorney General Clifford L. Hilton and Assistant Attorney General Henry C. Flannery were on hand for the State of Minnesota. A. D. S. Gillett represented the Commercial Club of Superior, and Charles P. Craig the Joint Civic Organizations of Duluth. Charles L. Harold, secretary of the Birmingham Civic Association, represented that organization.

Steel Producers Represented

The steel producers were represented by R. V. Lindabury, general counsel, and W. W. Corlett, general solicitor, of the United States Steel Corporation; C. W. Wickersham, attorney for the Lackawanna Steel Co.; Hoyt A. Moore, attorney for the Bethlehem Steel Co.; George C. Wilton, counsel, and S. G. Hackett, sales manager, for the Jones & Laughlin Steel Co.; G. H. Jones, vice-president, and Henry Russell Platt, attorney, for the Inland Steel Co.; Frank H. Scott, attorney, for the Steel & Tube Co. of America; L. A. Manchester, general counsel Youngstown Sheet & Tube Co.; W. D. Stewart, attorney for the Weirton Steel Co.; E. L. Herndon, attorney for the Eastern Steel Co., and A. L. Geiger, attorney for the Gulf States Steel Co.

The only steel producers named as respondents in

the case are the United States Steel Corporation, the Inland Steel Co., the Interstate Iron & Steel Co. and the Steel & Tube Co. of America, the concerns from which members of the Western Association of Rolled Steel Consumers purchase their rolled steel.

Others present at the hearings included the following: James E. MacMurray, Chicago, president Western Association of Rolled Steel Consumers; W. E. McCollum, Chicago, secretary of the association; W. T. Beatty, Chicago, director of the association; W. T. Lasker, Chicago, Lasker Iron Works; H. A. Wagner, North Milwaukee, Wis., president Wisconsin Bridge & Iron Co.; Paul Willis, Chicago, president Kenwood Bridge Co.; H. E. White, Minneapolis, member Western Association of Rolled Steel Consumers; Marquis Eaton, Chicago, counsel for the association; W. A. Collings, Kansas City, W. A. Collings Co.; James Francis Burke, Pittsburgh, Chamber of Commerce of Pittsburgh; John W. Walsh, attorney Petroleum Iron Works, Sharon, Pa.; George D. McIlvaine, Pittsburgh, secretary National Pipe and Supplies Association; J. V. W. Reynders, New York, representing Keystone Steel & Wire Co., Peoria, Ill., and D. O. Moore, traffic manager Chamber of Commerce of Pittsburgh.

Mr. Pickering's Argument

Mr. Pickering and Mr. Cheatham sought to prove that the Pittsburgh basing system is an unfair method of competition in violation of the Federal Trade Commission act and a discrimination in price in violation of the Clayton act.

New exhibits were presented by Mr. Pickering to establish the time when the practice became established. He presented invoices in an attempt to show that the practice first gained a foothold immediately after the formation of the United States Steel Corporation in 1901. Prior to that time, he said, there were zone prices in effect which bore no relation to the Pittsburgh base. In the early nineties, he said, many quotations were made upon a mill base without any reference to the Pittsburgh base.

In urging the issuance of a formal complaint, which would be preliminary to another investigation to determine whether an order should be issued directing the respondents to cease and desist from the practice, Mr. Pickering said that much of the evidence which should be brought out in the proposed subsequent investigation is not now available, owing to the lack of information relative to cost of production, distribution and other factors. He criticized the steel producers for bringing suit to prevent the Federal Trade Commission from gathering cost of production statistics after having, as he said, assured the commission at the Pittsburgh basing hearings of willingness to furnish any information desired.

Mr. Pickering caused a laugh by quoting liberally from speeches made by Chairman Murdock while a member of Congress during the consideration of the Federal Trade Commission act. At one point following the reading of such a quotation Mr. Murdock asked: "Is that mine?" When Mr. Pickering replied in the affirmative, Mr. Murdock remarked: "I want to say that I had at that time a remarkable private secretary."

"Pittsburgh Plus" Defined

Mr. Pickering in a preliminary statement, prior to a legal argument on the jurisdiction of the commission in the case, reviewed the history of the case and stated the effect of the operation of the basing system. He then said:

"In the first place, in our discussion, we shall refer to the practice complained against as 'Pittsburgh Plus' because that phrase more accurately describes the prac-

tice than the phrase 'Pittsburgh Base.' It is not without purpose that the respondents persist in referring to the issues in this case as relating to basing points, because they seek to draw a parallel between the trade in rolled steel products and the trade in wheat, sugar, flour, lumber, grain, wool, butter, cheese, spelter, and as Mr. Lindabury has said 'All like industries throughout the United States.' But what is 'Pittsburgh Plus'? It is a practice indulged in by every producer of rolled steel products (except rails) in the United States, and consists in charging as the price for such rolled steel products the market price at Pittsburgh, plus freight from Pittsburgh to destination. Note that the plus consists of the addition of freight from Pittsburgh. So that notwithstanding the fact that steel is rolled in Ohio, Indiana, Illinois, Wisconsin, Minnesota, Alabama, Colorado, California and other points, the price is always figured the same as though the steel were all rolled at Pittsburgh and shipped from Pittsburgh.

"To illustrate: If the price of a rolled steel product at Pittsburgh is \$47 per ton, everyone within the switching limits of Pittsburgh can purchase the steel at that price. As soon as you get outside the switching limits of Pittsburgh, there is added to the \$47 per ton the freight from Pittsburgh to destination. At Toledo, Ohio, the price is \$47 plus freight from Pittsburgh \$6, making \$53. At Fort Wayne, Ind., the price is \$47 plus freight from Pittsburgh \$6.60, making \$53.60. At Chicago, with steel mills in Chicago, the price is \$47 plus freight from Pittsburgh \$7.60, making \$54.60. At Fort Dodge, Iowa, the price is \$47 plus freight from Pittsburgh \$14.50, making \$61.50. At St. Louis the price is \$47 plus freight from Pittsburgh \$9.50, making \$56.50. At Duluth, Minn., with steel mills in Duluth, the price is \$47 plus freight from Pittsburgh \$13.20, making \$60.20. This freight addition in each case is the through rate.

"If this steel were manufactured at Pittsburgh and shipped from Pittsburgh, the prices which we have named are the natural logical prices to be charged. But steel is rolled in Ohio, Indiana and Illinois. These mills are closer to some of the points named than Pittsburgh. Buyers at these points frequently buy at the close mill. Under 'Pittsburgh Plus' what is the price of steel bought at a closer mill? For illustration we will take the mills at Chicago. The Chicago mill sells, at each of the points we have used for illustration, for \$47 plus the rate of freight from Pittsburgh to each one of these points, although the shipment is actually made from Chicago. The disparity between the freight rate added to the price, and the actual freight paid for actual shipment from Chicago, increases as you get back nearer and nearer to Chicago, until you come to a sale made from the Chicago mill to a Chicago customer, without any transportation being involved at all, and yet the price is still Pittsburgh base—\$47 plus freight from Pittsburgh to Chicago, \$7.60—total \$54.60.

The Plus Complained Of

"Now it is the plus that we complain of. In whatever respect the situation might be changed if there were no base, or if there were several bases, we would nevertheless be here as applicants for a complaint if the price of rolled steel products still included an arbitrary and unearned freight charge.

"Our position is this: We shall establish that rolled steel products are termed freely reproducible goods; that they are produced in enormous quantities at different points and for different markets; that the price naturally and normally determined would not include an arbitrary freight charge; that the present practice does include an arbitrary and artificial freight charge. Such a showing as that, when made, is sufficient to warrant a belief that there is something wrong in the steel trade. We shall then show that the wrong constitutes unfair competition and price discrimination, and ask your commission to issue a complaint for the purpose of investigating the situation, ascertaining whether our prima facie showing is supported by the facts, and, if so, to provide such remedy as the law contemplated.

"It appears that during the nineties there were two practices in vogue, whether simultaneously, successively

or alternately cannot be definitely ascertained. But certain it is that many quotations were made upon a mill base without any respect to the Pittsburgh price whatever and this at a time when undoubtedly the major portion of the steel sold in the West actually came from the East. The other method was the zoning system by which an arbitrary addition was made to the Pittsburgh price. This arbitrary addition was not the equivalent of any theoretical freight rate, but the practice was arbitrary and artificial. Beginning in 1901, quotations on the basis of 'Pittsburgh Plus' appeared, but the practice does not seem to have become universal for the space of a year or two, and many of the so-called independents, at least, quoted in terms other than 'Pittsburgh Plus.' Within a comparatively short time, however, the practice became universal."

Mr. Cheatham's Argument

Mr. Cheatham dealt with the question of price discrimination under the Clayton act and discussed the application of the basing system with particular reference to Southern consumers of rolled steel. He said in part:

"At the outset, let it be understood that we do not ask the commission to fix prices. It is true that the commission has no power to fix prices, and no one has suggested that the complainants have desired it to fix prices except those who would distort the complainants' position in order to discredit it. The commission has, however, been given explicitly a broad power with relation to prices, the power to prohibit and prevent discrimination; and it is this power to prohibit discrimination in price which we ask the commission to exercise.

"The difference between a power to fix prices and a power to prevent discrimination in prices is obvious and well recognized in the law. For nearly 20 years the Interstate Commerce Commission had no power to fix rates, but it did have full power to prevent discrimination in rates. The commission could not fix the rate A—B, but it could say in an appropriate case that the rate A—B shall not exceed the rate B—C. It would have been useless during that period to object to a proposed order of the Interstate Commerce Commission overthrowing a discrimination in rates simply on the ground that the commission had no power to fix rates. It is no less futile now to object to an exercise of the Federal Trade Commission in preventing discrimination by saying that this commission has no power to fix prices.

"The fact that such a law as this, prohibiting local or personal discrimination, is not price fixing is recognized and stated by the courts. Prohibition of local discrimination is not a new or strange thing in the law. At the time the Clayton act was passed, 19 states already had statutes prohibiting such acts. Indeed, these State laws are more stringent than the Clayton act, for they make the described acts criminal instead of delegating their prohibition to a commission. These laws have been repeatedly attacked, but have been as often upheld by every court which has passed on them, including the Supreme Court of the United States."

Steel Corporation a Person

Mr. Chatham contended for the following points:

"1. The Steel Corporation is a person within the meaning of the act, so that when discrimination is shown between the prices of the Birmingham and Chicago mills on one side and the Pittsburgh mills on the other, forbidden discrimination by the Steel Corporation is shown.

"2. Local discrimination forbidden. The fact that the sales in Birmingham and the sales in Pittsburgh are to persons in different localities does not remove the sales from the scope of the law.

"3. Discrimination by different mills. The suggestion has been made that this practice may not be discrimination because the sales in Birmingham are of goods from one mill of the Steel Corporation and the sales in Pittsburgh of goods from a different mill of the same company. This suggestion is unsound. The act does not prohibit merely discrimination by any

'mill' or 'factory,' it prohibits discrimination by any 'person'; and the Steel Corporation which controls all the mills is a single person.

Would Nullify Clayton Act

"It has also been suggested that these transactions are not forbidden by the law, because it is within the right of the Steel Corporation to establish its prices on any basis, real or imaginary, that it cares to; and so it is proper for the Steel Corporation to base its prices on the fiction of a shipment from Pittsburgh. This suggestion really nullifies completely Section 2 of the Clayton act.

"For the act, while not touching the fixing of prices, had for its whole purpose the insuring of a proper and economic basis for relation of prices in different localities. Thus while a manufacturer might fix his prices as high or as low as he cared, the act says that once he had decided on his price, he must, within the exceptions provided, extend those same prices to the whole trade; and the exceptions permitted are exceptions induced and forced by actual economic conditions. To say that the prices may vary in different localities on a basis wholly imaginary is to say that no difference in prices will be held to be discrimination; for there can always be found some imaginary conditions as the basis of the desired difference. It is to substitute economic conditions for whim in the determination of price relation that the act was passed. Such a suggestion overlooks therefore the conditions which called forth the law and the purpose of Congress.

"The act does not forbid merely discrimination which has lessened competition or which will have that result. It is enough to show that the forbidden discrimination 'may' lessen competition.

"This appears from the language of the act itself and also from the legislative history. The lessening of competition which the act seeks to prevent may be among either the competitors of the seller or the competitor of the buyer.

Tends to Lessen Competition

"The existing system manifestly tends to lessen competition among the producers. Since the application of Pittsburgh Plus makes a uniform price for the article at each place, no matter where it was rolled, it means there is no competition among the mills in prices. The prices may vary from time to time and from place to place, but since all producers follow these changes, there is no competition in price, and there are none of the benefits of lower prices for the communities where the mills are situated. It would be very different if the mills would sell f.o.b. Birmingham for the same price as f.o.b. Pittsburgh, for then Birmingham and the surrounding country would secure the natural advantage from proximity to the mills, and in all the country between Pittsburgh and Birmingham there would be competition in prices between the mills.

"The existing system gravely lessens the competition of the rolled steel consumers near Birmingham and Chicago with their competitors in the East and particularly with the subsidiaries of the Steel Corporation. For example, there were established on the Southern coast during the war several shipbuilding plants. This body was told by one of these shipbuilders at the hearing last December that the amount which he had to pay for his steel in Southern parts so handicapped him that he would have to retire from the business. This leaves the field open to the favored shipbuilders in the East who are no nearer to Pittsburgh than the Southern shipbuilders are to Birmingham. This handicap suffered by Southern shipbuilders is also suffered by all Southern manufacturers.

Handicap for Southern Plants

"An even more serious handicap for the Southern shipbuilders, however, in the enormous advantage enjoyed by that subsidiary of the Steel Corporation, the Chickasaw Shipbuilding Co. While the other shipbuilders have to pay Pittsburgh Plus, it is a mere matter of bookkeeping whether the profit made is reflected in that company's reports or goes to swell the dividends of the Tennessee company at Birmingham.

"In the report by this commission the dissolution of the International Harvester Co., a similar situation

was condemned because of its tendency to lessen competition.

Not True Competition

"There are many circumstances which demonstrate that the lower price at Pittsburgh is not forced by any true competition there.

"(a) The Steel Corporation has openly boasted of a policy of steadying the market. Usually this policy is effected, as the corporation's reply and the court's opinion in the dissolution suit show, by concerted action with others.

"But in times of acute demand, such as those just experienced, most of the smaller mills were eager to make all the money possible and they raised their prices to very high levels. The Steel Corporation during this period consistently kept its price below those of the independents, for the purpose of steadying the market. Certainly, under such conditions, it is impossible to argue that the lower prices at Pittsburgh were forced by competition. Yet during that period, the same handicap on Birmingham was continued.

"(b) If this discrimination were due to actual competition at Pittsburgh, forcing the price at Pittsburgh to vary by the amount of the rail haul, then this discrimination would not vary and would always be equal to the amount of the freight rate. Yet this is disproven by the admitted facts. We have already shown how the differential at Birmingham varies in a way which bears no relation to freight rates. It has been increased or denied as the Steel Corporation wished. The plea of competition or economic law as applicable to such condition is almost ludicrous.

Admissions of Judge Gary

"We read to the commission last time and we ask the commission again to consider with care the admissions made by Mr. Burr, Judge Gary and other steel men in 1908 concerning the Birmingham situation. These men had no thought of economic law. They were sitting around a table and there deciding by themselves on the amount of the Birmingham differential. There was a consciousness of power on the part of those men which shows they realized completely that the forces which determined the relation of Pittsburgh and Birmingham prices were not enforced by competition, but the desires and decisions of the executives of the Steel Corporation.

"(c) The history of the steel industry shows it has been permeated from its inception by a desire to eliminate or lessen competition. We outlined in a written statement at the December hearing the history of the industry, showing the opinion of the commission and the courts. To this we ask the court's attention.

"The Steel Corporation may appeal to the Supreme Court's decision in the dissolution suit, disproving these charges, but in fact the decision sustains them. The three minority judges expressly approved the opinion of Judge Woolley of the district court, and the majority judges stated that they too concur with it in the main, and Judge Woolley's opinion was a graphic picture of the illegal organization of the Corporation and its unremitting illegal efforts at price control through co-operation with its competitors down to within a few months of the institution of the dissolution suit.

"The majority, too, after adverting at one point to the persuasion of competitors 'by pools, associations, trade meetings, and through the social form of dinners,' explicitly stated that the case might take on a different hue if it were grounded on the confederation of the Steel Corporation with its competitors rather than on monopolistic power in the Steel Corporation itself.

"It is not too much to say that an organization, an industry, which has this history must make the clearest proof of the honesty and genuineness of any competition alleged.

"The steel industry is a long record of price control—as was alleged to be true of the manufacturers of farm machinery. The same banking house which organized and sent on its way the Steel Corporation also did the same work for the chief factor in the implement business, the International Harvester Co.

"The use of Pittsburgh Plus, even by itself, shows there is no true competition in the industry."

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THE IRON AGE

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Contract Keeping

Some developments in connection with the efforts to cancel orders for iron and steel products have jarred seriously the ideals of many who have been long in business. Men who hold to the old-fashioned belief that a contract is a contract and that when a thing is bought it should stay bought, unless for good reasons both parties to the contract want to modify it, have been amazed at some of the cool repudiation of the past two trying months. Some of the claims set up amount to nothing less than that if a buyer has contracted for more than he sees he needs, or, because of failure to receive cash from his own debtors, finds it inconvenient to take in and pay for purchases he made in good faith, he need have no compunction about writing to have his order stricken off the list.

Yet, as we have pointed out in commenting on this matter before, there have been extenuating conditions in many cases. The cutting off of automobile orders, for example, has been a blow to many builders of motor cars and to manufacturers in various lines who for months have had their shops full of work entering into cars. These latter, when the bottom dropped out of the automobile business, suddenly found that they had no need of pig iron or of steel they had bought for the carrying out of their contracts. Some of them, if forced to take all the material they were obligated to take within a given time, might have gone to the wall. Sellers of iron and steel were quick to realize that if the letter of the contract were insisted on the result would be disaster, serious and widespread. Yet it was not overlooked by manufacturers dealing directly with motor car companies which were demanding in a summary way both cancellations and price reductions, that the latter were entirely responsible for the astonishing premium prices for sheets which have so completely upset the sheet trade for the greater part of this year. Not only so, but the scramble for sheets affected other steel lines and caused such an engorgement of the mills by over-buying as has made the recent reaction more

abrupt and disturbing than it otherwise would have been.

The present unprecedented epidemic of cancellation emphasizes the far-reaching influence of the hectic conditions that have marked the automobile industry for so long a time. The unfortunate feature of the situation is the indiscriminate way in which many buyers have passed on to those with whom they have contracts the exact treatment which the former have had at the hands of their customers. The reasoning is that one has a right to cancel because another has canceled on him. It hardly need be pointed out that ethical standards commonly recognized heretofore have suffered severely under such treatment. The development is in a marked degree like the contagion of profiteering. Others are profiteering; why refrain?

Yet we believe that the large majority of American business men in this time of readjustment, trying in many respects, are standing by their contracts, giving practical recognition of the solemn moral obligations which form the contractual basis of the whole commercial structure. If it were not so that many are taking this firm stand for an honest, reasonable and discriminating handling of all the complicated issues involved, the situation might run to consequences which none could wish to see added to present difficulties.

Industrial Relations in Steel

The address of William B. Dickson before the anniversary meeting of the American Society of Mechanical Engineers, printed in large part in last week's IRON AGE, is rather calculated to set men to thinking than to put them on a definite course as to future action. Mr. Dickson characterizes the labor system or policy of the United States Steel Corporation as a "benevolent autocracy." He emphasizes the benevolence of the system, but insists that it is an autocracy, and asserts that autocracy in industry is entirely out of keeping with our democratic institutions, that political democracy is not an achievement but merely an opportunity.

to be used for the establishment of industrial democracy.

Mr. Dickson does not criticize the Steel Corporation as being a leader in the steel trade in the matter of industrial autocracy, but rather as being the institution the trade naturally looks to for the inception of changes. The corporation's treatment of its employees, under the system that has been generally followed in the trade, is particularly benevolent.

It will be granted quite generally that employer autocracy is objectionable and ought to be succeeded by something better. One must always keep in plain view the fact that the alternative that has presented itself in the past, and that very definitely loomed up in the steel strike, is a labor autocracy, and that is something to be avoided absolutely. If the employee does not like the present system in the steel industry, he has the opportunity to seek employment elsewhere, though by no means do we say that there should be no other alternative. But with a labor autocracy established, the employer could not withdraw his capital and put it into other employment, for the capital would be destroyed by the investment being rendered profitless.

Mr. Dickson's theme presents food for thought. It does not indicate definitely the way out, though it is well known that Mr. Dickson has actively advocated employee representation in shop government. Following the pronouncement that capital, management and labor are like the legs of a three-legged stool, no one more important than the other, full co-operation therefore being necessary, the address refers to "collective bargaining," perhaps using the term in the sense of collective conferring. In the commodity markets there is bargaining, but that is not considered co-operation. The seller seeks the highest price, the buyer the lowest price. When the seller and buyer get together, to determine what is the service desired and how the service can be best rendered, that is not called bargaining, but is co-operation.

Profit sharing is next mentioned. While that can be regarded as a general term, Mr. Dickson goes on to speak of investment by the workman in the stock of the company, which certainly limits the idea, and one must note that while Mr. Dickson referred very specifically to the Steel Corporation in one or two portions of his address, it is the Steel Corporation that has furnished by far the most notable example of a large company giving employees an opportunity to acquire its stock. The Steel Corporation, however, has never adopted profit sharing, as commonly understood.

The emphasis Mr. Dickson puts upon the need of "a more democratic basis" in industry, "giving recognition to management and labor as equal partners with capital," and his advocacy of a policy "which would give the fullest recognition to the human factors involved" are in line with much that has been written on the new spirit which the outcome of the great war has brought into industrial relations. How shall it find practical expression? In last week's IRON AGE was a letter telling how one general superintendent's way of treating everybody about the plant as a fellow worker had produced record-breaking results in the rolling of

steel in October. Evidently these workers interpreted the attitude of the company, as expressed by this superintendent, to be one of good will and they responded in kind. Yet that plant has the 12-hour turn, which the steel industry must contrive in some way to abolish, and has no plan for employee representation through conference committees. Even so, it has made a wonderful record because of the personality of the man at the head of it.

That one man who is described as "kind, modest, 'common,' good-natured," can bring about such results would seem to argue that the stock of good will at steel plants could be increased by definite effort to establish a democratic status. THE IRON AGE has urged on other occasions that there be more every-day use of the very methods that in the Liberty loan campaign brought employers and men into such admirable co-operation during the war. This war co-operation was spontaneous and not staged and it had great results. Something like it is called for to meet the increasing demand for a better recognition of the human factor in the steel industry. Some steel companies are cultivating better relations with their employees through conference committees on which the employee representatives are chosen by the workers. If this be not the best means of meeting the issue that has been raised, of a "benevolent autocracy" under which everything works from the top down—all movement vertical and nothing horizontal—then let the better way be shown. The time is ripe for it.

The Steel and Other Industries

The steel industry is to be congratulated on the condition of activity it has maintained to date. While many other industries have been languishing for weeks or months, it has had a very fair rate of operation. Production of steel ingots in October was at the highest rate, though by only a fraction of 1 per cent, since last March, and with the exception of February and March the rate was the highest since December of 1918.

Furthermore, the steel produced is being shipped and consumed. Some industries find themselves not only idle but with large stocks of manufactured goods on hand. The steel industry has some stocks remaining from the period of car shortage, but it is shipping the stocks in addition to current production. The inventories at the end of the year will show relatively small quantities of rolled steel products in the hands of either producers or consumers.

While the banks have been calling the loans on which large quantities of commodities of various sorts have been carried, requiring the holders to "liquidate," neither producers nor consumers of steel have been subject to this process to any extent. The steel producers have financed themselves, their customers paying their bills and usually discounting them, apparently with no particular effort.

It is a record of which the steel industry may well be proud. The industry has been doing a plain, straight business. In certain quarters there has been a little criticism of the high prices

charged by some of the independent producers, but the consumer was free to buy or not, as he chose, while the high priced steel has passed on, not being carried speculatively. The highest prices were paid by the automobile industry, but a few cents a pound for steel is practically nothing considering what the owner pays for an automobile, or what it costs to operate the car for a season.

It is true there have been some speculators in steel, and some of them have failed, but the total quantity of steel that has passed through speculators' hands in the past twelvemonth has been insignificant by comparison with what has passed directly from mill to distributor or consumer. In some commodities a large percentage of the quantity of material produced has passed through speculators, and to that fact has been due certain unconscionably high prices.

It is no discredit to the steel industry that it is still making money. Copper is selling at several per cent below its average price in 1913, and below the cost of many producers, but that is a misfortune of the copper industry, not a virtue. Tin is about 15 per cent below its 1913 average, the price now being due largely to special conditions. Zinc is only 20 per cent above its 1913 average. Steel prices have been very much above their average, not merely in 1913 but in any number of years before the war, but it has not been shown that the price has caused suffering or disturbed business.

The prolongation of the steel industry's prosperity to this time, when other industries have dropped out by the wayside (a condition partly in compensation for the interruptions that came to it when other industries were prosperous), does not indicate that the steel industry will not have to readjust itself. It cannot escape and does not expect to escape. It is now gaging its production carefully to the actual consumptive demands of the country and it will adjust its prices as occasion requires, without panic or excitement. If industrial and financial conditions make it necessary that steel be sold at lower prices than are in keeping with present costs, the change in those conditions will pave the way for the industry to reduce its costs. The steel industry will adapt itself to whatever circumstances may arise, as it has always done.

There have been curious cross currents in our foreign trade in pig iron. In imports the rate to Sept. 1, this year, was in excess of that of 1913. In the latter year the imports were 10,050 gross tons per month, falling to 1,800 tons per month in 1917 and to only 167 tons per month in 1918. In 1919 they recovered to 4,850 tons per month, but to Sept. 1, this year, they have risen to slightly over 12,000 tons per month, or quite above the pre-war rate. Exports in 1913 were 23,130 tons per month. They increased in 1919 to 26,110 tons per month, but they have fallen off since until for the first eight months of this year they were 18,920 tons per month. Italy has been the largest customer this year, with Canada, Belgium and Japan ranking next in the order named. The increase in imports and decrease in exports this year have

been caused in part by the scarcity here, which resulted in the high prices for all grades of pig iron in the late summer.

The Iron Age and Its Readers

What goes on in Washington soon will be again of national interest. It is THE IRON AGE's task to develop the situation as it affects the metal working industries. The daily press prints what concerns the general public, but it is left to the business journals to supply information that its readers cannot well get elsewhere. As pointed out in our Washington forecast last week, impending executive and legislative programs are likely to involve again illuminating dialogues worthy of detailed reporting in the interest of specific branches of industry. This will call for special interpretation not to be found in a general newspaper. As heretofore, Washington as a focal point of business problems will be given special attention.

The multifarious steps in technical progress are indicated by a scrutiny of the average IRON AGE issue. Last week's covered the question of valves in internal combustion motors, a new cyanide process for hardening steel, the direct casting of high-speed steel metal-cutting tools and the heat losses through electrodes of electric furnaces. The technical news from week to week reflects the advance in industrial processes just as the commercial news shows how the industry is functioning as a barometer of trade.

CORRESPONDENCE

Why Strong Export Packing is Necessary

To the Editor:—Few manufacturers and exporters of machinery to Japan realize the chaotic conditions in the warehouses and storage places at the piers in Yokohama. Through one of our representatives we received some photographs, and we believe that it would be of interest to your readers to see these pictures and read the comments that our people made.

Photograph (at upper right) shows the entrance to the docks in Yokohama. The row of boxes in the background consists mostly of spinning machinery. They are in the open, subjected to all kinds of weather, and one can imagine how the machinery will look when it is unpacked.

Photograph (upper left) shows one of the small waterways running alongside the docks where lighters are gathered in crowds to discharge their loads. Most of the lighters are unnumbered, and the steamships keep no record of what the lighters take as cargo, and the landing agents are, consequently, at a loss to tell you where any part of your shipments have been landed, as the lighters make for the nearest available space to unload. Many of the lighters shown in the picture have been tied up for over two months. Merchandise may be noted piled up outside the warehouse. Inside it is piled up to the tops of the doors without even a path left from one end to the other. One has to climb over the tops of cases and boxes, bales and barrels until he finds what he is looking for. Then it is practically impossible to get it out until the stuff between your material and the doors have been cleared away.

Photograph (lower left) shows a section of one of the wharves. The tires are second-hand tires used in making rubber articles.

Photograph (at right) shows one of the roadways between the warehouses down which one is supposed to drive to take material from the go down. There

are railroad tracks on each side, but, needless to say, they will not be used for many months to come until the accumulation of shipments has been removed.

Photograph (lower right) shows some material which is just being unloaded from a steam lighter. Boxes are dropped on top of the pile, and one of them has just rolled down and has landed with its corner inside another box, smashing half a dozen of the boards.

We feel that the attention of American manufacturers should be drawn to these facts, in order to save them from utter disappointment when machinery is not packed strongly and safely to withstand rough handling and exposure to wind and weather.

FELIX F. WIENER,
New York. Amplex, Inc.

vote is now null and void, judging from the last election. With the women voting and unorganized, labor is not a political menace.

People, you know, should go back to the small towns and farms from which they came. Anything to this end should be cultivated by all trade journals.

W. A. ATKINS.

204 Harvey Street, Elgin, Ill.
Nov. 12.



Congested Wharves
at Yokohama Indi-
cate Why Strong,
Weather - proofed
Packing Is Neces-
sary



Repeal of the Adamson Law

To the Editor: Referring to the above subject, I believe you will agree with me, judging from trade reports in THE IRON AGE, that now would be a good time to repeal the Adamson law. If the law were repealed it would please most business men that I have talked with. The labor board section of the Esch-Cummins law should also be taken up for repeal. Such class legislation is un-American and should be done away with.

If something is not done to help the farmers along, they will soon have no help and what will the city people do for some one to feed them? A man will not work 16 hr. a day on a farm when he can get work 8 hr. a day in the city, hence making the housing problem so acute. Can you not start some propaganda for the repeal of this law in THE IRON AGE, asking business men to write their congressmen and senators. The labor

New Blast Furnace Mixture

To the Editor: See what an associate editor of *Printer's Ink* says the manufacturer of steel rails puts into his "blast furnace":

As we pointed out two weeks ago in "The Cost of Manufacturing the Agate Line," the manufacturer who puts iron, ore, steel and his other raw material into a blast furnace and makes steel rails has a definite production and merchandising proposition. His is a conversion business. The raw material is subjected to the conversion processes through labor, and the finished product taken out and sold. The final selling price of his finished product is based upon the manufacturing cost.

I am afraid the result of this editor's charge would be a complete reformation instead of a conversion.

CHARLES CLARK.

New York, Nov. 11, 1920.

Iron and Steel Markets

MORE MILL SHUT-DOWNS

Steel Corporation Activities Hold Up, However

Independent Prices Still Declining, But New Buying Is Scant

With buying almost at a standstill, independent steel company prices are still declining, in a few cases getting to the Steel Corporation level, and more blast furnace and steel works capacity in all districts is idle. Steel Corporation operations hold up to 80 per cent or more, while independent plants are gradually running out of business. In northern Ohio some shutdowns are nearly complete.

There is no thought of getting this year an adjustment of prices that will cause free buying and the period of quiet may run some weeks into the new year. To get stocks down to their lowest before Jan. 1 is the aim of all users.

The transfer of huge piles of low priced steel products from Steel Corporation mills to the floors of consumers will be hastened by the Commerce Commission order permitting the general use of all tight bottom gondola cars.

Interest is centering in the prices the Steel Corporation will announce early in December on sheets and tin plates for the first half of 1921 and on rails for the year.

Germany's slightest move in exports gets much notice. In Cuba and in South America domestic wire works have felt German competition lately. More noteworthy is the loss to Germany of a 5000-ton tie plate order from the Dutch East Indies. A Chicago mill quoted 3.25c., equal to 2.87c. Pittsburgh. A European mill—the country not being named—also captured a 20,000-ton rail order for the Dutch East Indies against American competition.

At Chicago the leading independent has met the Steel Corporation's prices on plates and shapes and holds steel bars at 3c. However, it would appear that on some bar business an independent quotation of 2.35c. has been made.

One large sheet producer has revised its contracts for the last quarter by cutting \$10 per ton to 6.50c. for black sheets and 8c. for galvanized. In another case, where the loss of automobile tonnage was marked, early delivery sheets were offered at 6c. for black, 7.25c. for galvanized and 5c. for blue annealed.

Outstanding in the quiet steel fabricating trade is the placing in Pittsburgh of ten coal barges requiring 14,500 tons of steel and of six steel barges for South America. About 7500 tons of sizable

building and bridge work was put under contract. The large active projects include a bank building in Chicago, 9000 tons; a hotel in Buffalo, 8000 tons, and a theater in Cleveland, 3500 tons.

Tin plate has commonly brought half again more than black plate, according to 20-year records—a relation worth remembering in the expectations of a different relation between the two in the near future.

Though a good part of any new business is expected to go to the warehouses, on the score that buyers will keep up emergency buying until mills get a stable price policy, a reduction of jobbers' prices has occurred. These are approaching the \$15 per ton spread over Steel Corporation mill scales in New York and Buffalo and have generally reached the corporation's warehouse levels in Chicago, St. Louis and Detroit. The action signifies that jobbers have fair sized stocks.

Billets in Great Britain have been reduced £1 to £17 but German billets have been offered there for £12, f.o.b. German steel bars are obtainable at 3c. per lb. in Buenos Aires, which corresponds roughly to less than 2.10c., Pittsburgh.

Pig iron prices are still receding. In the Pittsburgh district, furnaces are quoting foundry grades \$2 lower and steel making grades from \$1 to \$2 lower, while resales of basic in the Pittsburgh district have been made at several dollars below the furnace quotations. Sharp declines have also been noted on both foundry and basic in the Philadelphia district. Many furnaces have taken a decided stand against allowing cancellations, but postponements of shipments are frequently conceded.

The bi-monthly settlement of wages of sheet and tin mill workers has resulted in an advance of 3 per cent for the former and nearly 8 per cent for the latter, but these advances are based on selling prices of September and October and it is quite certain that the next change will be downward.

Pittsburgh

PITTSBURGH, Nov. 16.

Further modification of Interstate Commerce Committee order No. 20, effective at midnight to-night, releasing all tight bottom gondola cars with sides of any height to general service is expected to largely reduce, if not entirely eliminate by the end of this month any accumulations that now exist of iron and steel at point of production. The order also is considered likely to produce a materially easier price situation for the reason that the Steel Corporation subsidiaries, with their low-priced bookings, have suffered more from the car distribution restriction than the independent companies, and the large number of cars released is likely to open wide the gates that have held in check deliveries. Demands upon the independent steel companies in the past week have been even more limited than they had been since the reaction in buying set in several weeks ago. Between this fact and the elimination through cancellation of high-priced orders, these companies now have comparatively slim order books. This is finding reflection in plant operations of these in-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 16, 1920	Nov. 9, 1920	Oct. 19, 1920	Nov. 18, 1919
No. 2X, Philadelphia...	\$44.79	\$47.79	\$51.54	\$36.10
No. 2, Valley furnace...	39.00	41.00	47.00	32.00
No. 2 Southern, Cincinnati...	42.50	42.50	46.50	34.60
No. 2, Birmingham, Ala. f.	38.00	38.00	42.00	31.00
No. 2, foundry, Chicago*	40.00	40.00	43.00	32.00
Basic, del'd, eastern Pa.	41.16	44.46	51.26	31.25
Basic, Valley furnace...	37.50	38.50	43.00	30.00
Bessemer, Pittsburgh...	41.96	43.96	48.96	32.90
Malleable, Chicago*	40.50	40.50	46.50	32.50
Malleable, Valley	40.00	42.00	50.00	32.00
Gray forge, Pittsburgh...	39.96	41.96	47.96	32.40
L. S. charcoal, Chicago...	53.50	53.50	58.50	37.50
Perromanganese, Atl. port.	140.00	150.00	170.00	110.00

Rails, Billets, Etc., Per Gross Ton:	Nov. 16, 1920	Nov. 9, 1920	Oct. 19, 1920	Nov. 18, 1919
Bess. rails, heavy, at mill.	\$55.00	\$55.00	\$55.00	\$45.00
O.-h. rails, heavy, at mill.	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh...	50.00	50.00	55.00	42.00
O.-h. billets, Pittsburgh...	50.00	50.00	55.00	42.00
O.-h. sheet bars, P'gh.	60.00	60.00	62.50	45.00
Forging billets, base, P'gh.	60.00	60.00	70.00	57.00
O.-h. billets, Phila.	55.74	60.74	60.74	47.50
Wire rods, Pittsburgh...	70.00	70.00	75.00	55.00

Finished Iron and Steel,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	4.60	4.85	4.85	3.245	
Iron bars, Pittsburgh...	4.50	4.50	4.75	3.10	
Iron bars, Chicago...	3.75	3.75	3.75	2.72	
Steel bars, Pittsburgh...	3.00	3.00	3.00	2.75	
Steel bars, New York...	3.38	3.38	3.63	3.02	
Tank plates, Pittsburgh...	2.85	2.85	3.00	2.65	
Tank plates, New York...	3.38	3.38	3.38	2.92	
Beams, etc., Pittsburgh...	3.00	3.00	3.00	2.45	
Beams, etc., New York...	3.38	3.38	3.48	2.72	
Skelp, grooved steel, P'gh.	3.25	3.25	3.25	2.45	
Skelp, sheared steel, P'gh.	3.50	3.50	3.50	2.65	
Steel hoops, Pittsburgh...	4.00	4.50	5.00	3.25	

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Nov. 16, 1920	Nov. 9, 1920	Oct. 19, 1920	Nov. 18, 1919
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	6.00	6.00	6.75	4.35
Sheets, galv., No. 28, P'gh.	7.25	7.50	8.25	5.70
Sheets, blue an'd, 9 & 10.	4.75	4.75	5.00	3.55
Wire nails, Pittsburgh...	4.25	4.25	4.25	3.50
Plain wire, P'gh.	3.75	3.75	3.75	3.10
Barbed wire, galv., P'gh.	4.45	4.45	4.45	4.25
Tin plate, 100-lb. box, P'gh.	\$7.50	\$7.50	\$8.50	\$7.00

Old Material, Per Gross Ton:	Nov. 16, 1920	Nov. 9, 1920	Oct. 19, 1920	Nov. 18, 1919
Carwheels, Chicago	\$33.00	\$33.00	\$36.00	\$28.00
Carwheels, Philadelphia	38.00	39.00	40.00	28.00
Heavy steel scrap, P'gh.	23.00	25.00	28.00	23.00
Heavy steel scrap, Phila.	19.00	20.00	22.00	20.50
Heavy steel scrap, Chicago	18.50	18.50	20.50	18.00
No. 1 cast, Pittsburgh...	35.00	35.00	40.00	28.00
No. 1 cast, Philadelphia...	34.00	36.00	39.00	29.00
No. 1 cast, Ch'go (net ton)	22.00	22.00	28.00	28.50
No. 1 RR. wrot, Phila.	24.50	26.00	28.00	28.00
No. 1 RR. wrot. Ch'go (net)	16.50	16.50	20.00	23.00

Coke, Connellsville,	Per Net Ton at Oven:	Cents	Cents	Cents	Cents
Furnace coke, prompt...	\$8.00	\$8.00	\$15.50	\$6.00	
Furnace coke, future...	9.00	9.00	14.00	6.00	
Foundry coke, prompt...	9.00	9.00	16.50	7.00	
Foundry coke, future...	10.00	10.00	14.00	7.00	

Metals,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.75	15.00	16.00	20.50	
Electrolytic copper, N. Y.	14.75	15.00	16.00	20.00	
Zinc, St. Louis	6.85	6.80	7.25	7.95	
Zinc, New York	6.80	7.25	7.50	8.30	
Lead, St. Louis	6.57 1/2	6.50	7.00	6.55	
Lead, New York	6.50	6.75	7.25	6.80	
Tin, New York	37.00	37.00	38.25	53.87 1/2	
Antimony (Asiatic), N. Y.	6.00	6.25	6.50	9.25	

terests. The leading independent in the Pittsburgh district, which has been curtailing in both producing and finishing departments in the past two weeks for the purpose of cleaning up yard accumulations, has brought down its stocks to a point where larger operations are possible. This company, which recently has been running its open-hearth and Bessemer departments at an average of about 60 per cent, this week is operating them practically full. This case, however, is the exception rather than the rule. A Valley sheet maker with 100-ton open-hearth furnaces stopped operations in them on Saturday night for the purpose of rolling an accumulation of about 10,000 tons of steel lying in its yards. A Pittsburgh producer of bar and plate alloy steel is entirely idle, while another has only three of its 12 open-hearth furnaces on. The Steel Corporation subsidiaries, meanwhile, are maintaining the recent rate of operation or making gains. Active ingot capacity of the Carnegie Steel Co. now is 85 per cent engaged, and it has 44 of its 59 blast furnaces in blast. Since 53 furnaces constitute 100 per cent operation of its blast furnaces, six always being idle in reserve, it may be said to be operating 85 per cent of its iron making capacity. A week ago it had 43 furnaces in blast.

The recent three-day embargo of the Pennsylvania Railroad has been ineffective in relieving the congestion on that railroad and the imposition of another embargo of three days or longer is under consideration. Other railroads serving this district and claiming to be clear of all congestion are offering better service and actively soliciting business.

The pig iron market has begun to slip again with foundry grades off \$2 a ton on sales and the steel-making grades from \$1 to \$2 lower in the asking prices of merchant producers. At least two Pittsburgh district steel manufacturers have surplus tonnages of

basic for sale, while there is one company in the Valley district, one company in the Wheeling district and one in the Chicago district which also are in a receptive mood for business in this grade of iron.

The coke market appears to have found a temporary resting place at the quotations of a week ago, but with both mine and oven labor becoming more plentiful and less costly, not to mention the increased supply of coal which becomes available through the stoppage of shipments to the Northwest, few of the trade expect other coke or coal prices to long hold at present levels.

There has been a sharp break in scrap prices, due to the fact that so many melters are stopping shipments against contracts and the utter lack of buying by either these interests or dealers.

Pig Iron.—Prices have resumed their downward march, with foundry iron off \$2 per ton from the price of a week ago on actual sales, while merchant producers in an effort to uncover a demand have lowered their asking prices on basic \$1 per ton and on Bessemer \$2 per ton. The cut in the latter grade has been unproductive of business for the reason that a considerable amount of resale iron is hanging over the market and some of the steel companies have substantial tonnages of basic for which they are seeking buyers at well below the new prices of the merchant producers. We note a sale of 500 tons standard basic to an Allegheny Valley sheet maker at \$33, Valley furnace basis. This was a resale tonnage. While manufacturers with surplus tonnages of basic have expressed a willingness to take business at \$35, they probably would not reject summarily firm offers even below that figure. Standard Bessemer is being offered by merchant producers at \$40, Valley furnace, as compared with the nominal asking price of \$42 a week ago. The Standard Sanitary Mfg. Co., which recently sought 2000 tons of foundry iron for its Pittsburgh district

plant and a like quantity for its Louisville, Ky., works, has withdrawn the latter inquiry and has bought 1000 tons for its nearby plants. This purchase was made from a Valley furnace and the price was \$39 for iron running from 1.75 to 2.25 in silicon, and \$40.25 for iron running 2.25 to 2.75 silicon. This company has withdrawn from the market for the remainder of the original inquiry. Malleable iron is freely offered at \$40, and since there are no takers a higher price hardly can be quoted. A Valley maker of low-phosphorus pig iron still is quoting \$56, furnace, for copper-free iron, but has had no business at that figure.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic	\$37.50
Bessemer	40.00
Gray forge	38.00
No. 2 foundry	39.00
No. 3 foundry	38.50
Malleable	40.00

Ferroalloys.—The market is absolutely devoid of life and prices remain nominal in the absence of transactions. The public quotation of both domestic and English makers of ferromanganese still is \$170, Atlantic seaboard, for 76 to 80 per cent material, and they seem inclined to hold to that figure pending a cleaning up of the resale tonnages which are hanging over the market. This promises to be a long time, as those consumers who have surplus supplies are having much trouble in disposing of them even at a price as low as \$135. Moreover, considerable doubt exists that makers to-day would refuse to consider bids within the range of resale tonnages or from \$135 to \$150. Makers of spiegeleisen continue to quote \$75 furnace, for average 20 per cent alloys, but are doing no business at that figure, as resale tonnages are available and have been sold at \$60 to \$65. The market in ferrosilicon, both low and high grade, is indefinite in the total of absence of business. A Pittsburgh district maker of castings for automobiles has received cancellations for practically all of the unfilled orders and is offering for resale 250 tons of 8 per cent silveries bought a few months ago at around \$56, furnace.

We quote 76 to 80 per cent ferromanganese at \$140 to \$150, seaboard, for either domestic or English material, on direct sale for prompt delivery, and \$150 for first quarter 1921 shipment; resale tonnages \$135 to \$150 seaboard. We quote average 20 per cent spiegeleisen nominal at \$75 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces as follows: 9 per cent, \$66; 10 per cent, \$69.50; 11 per cent, \$72.80; 12 per cent, \$76.10. Silvery iron, 6 per cent, \$56.50; 7 per cent, \$58; 8 per cent, \$60; 9 per cent, \$62; 10 per cent, \$64.50; 11 per cent, \$67.80; 12 per cent, \$69.80. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

Plates.—A leading independent maker in this district is now quoting 3c. on plates and this measures the maximum, although 3.25c. is being named against an inquiry by several makers. The latter, however, would take business at 3c., and apparently buyers could secure tonnages at even less than this if they saw fit to make firm bids. The demand remains extremely limited, and independent quotations in all cases are more on an asking than on a selling basis.

We quote sheared plates of tank quality, ¼ in. and heavier for early delivery from independent mills at 2.85c. to 3c. Pittsburgh. The Carnegie Steel Co. still quotes 2.65c. and is accepting business at that figure, but is not guaranteeing early delivery.

Structural Material.—Although lettings still are few and small, the more general report from fabricating interests is of marked improvement in inquiries. Whether investors merely are testing out the market or intend to close is something for the future to disclose. In most quarters it is believed that important lettings will not come out until buyers are satisfied that prices have reached bottom. The Riter-Conley Co. has just taken 10 coal barges for the Pittsburgh Coal Co. involving about 14,500 tons of steel, the barges being 175 ft. long, 26 ft. wide and 11 ft. deep. The Dravo Contracting Co. has taken 6 steel barges for shipment to South America. It is reported that the Frank & Seder Co. has revised its plans for its new building in Detroit and will build an addition to its present structure involving about 150 tons. The market in plain material continues to soften, the leading independent in this district now quoting both plates and

shapes at 3c. It is believed that even lower prices could be secured against desirable business, although one independent in this district is quoting 3.10c. base and reports sales at that figure. Prices are given on page 1364.

Billets, Sheet Bars and Slabs.—Business continues pretty much at a standstill in all forms of semi-finished steel because of the dwindling demands for practically all kinds of finished material. Not only are demands few and small, but specifications against contract tonnages are fewer than they have been. In the way of inquiries, an Allegheny Valley sheet maker is seeking 3000 tons of sheet bars for delivery in equal quantities in December, January, February. Regular makers of sheet bars who have contract tonnages to ship still are holding to \$65 Pittsburgh or Youngstown, and some of the irregular producers also are quoting that price. However, \$60 Pittsburgh or Youngstown is regarded as about as high as any business could be done at to-day, and the suggestion is heard in consuming circles that even less could be done. Few makers now are asking more than \$55 for 4 x 4 in. rerolling billets and there are even suggestions that less than \$50 could be done by buyers with desirable orders. Slabs also are offered by independent companies at \$55, but no business has been done there and buyers regard \$50 as about as high as they would have to go to secure tonnages. The National Tube Co. is in the market for 50,000 tons of steel and the inquiry includes ingots, slabs and universal plates or skelp.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$43.50 to \$55; 2 x 2-in. billets, \$47 to \$58.50; Bessemer sheet bars, \$47 to \$60; open-hearth sheet bars, \$47 to \$60, and forging billets, ordinary carbons, \$60 to \$65 base, all f.o.b. Youngstown or Pittsburgh mill.

Wire Rods.—The passing of the premiums in common wire products has resulted in a considerable decline in the demand for rods from the non-integrated manufacturers, and while makers still are quoting \$70, and in a few instances \$75, they are getting almost no business at these figures. Producers of nails and wire cannot go that high and get out at a profit at what they would have to sell the finished products to-day. Rivet and chain makers still are seeking rods suitable for their needs because of the continued slow delivery against their contracts. Prices are given on page 1364.

Wire Products.—A Valley maker who a short time ago advanced prices of wire products \$5 per ton to \$4 base per 100 lb. for wire and \$4.50 base per keg for nails, has announced a revision to the former quotations of \$3.75 and \$4.25 respectively. Only one independent company now is quoting \$4.50 for nails and all independent companies are at \$3.75 for plain wire. Suspensions and cancellations still are coming in, and as new business is small, the backlog of all of the independent companies consists of old orders, not a few of which were taken at below the present quotation. The leading interest is doing a little better than it did a short time ago on deliveries on contracts. Premium business may be said to have entirely disappeared.

We quote wire nails at \$3.25 base, as the price of the American Steel & Wire Co., and \$4.25 to \$4.50 by independent mills. We quote bright basic wire at \$3.25, the price of the American Steel & Wire Co. and \$3.75 to \$4, the price range of the independent mills.

Tin Plate.—The market is marking time pending the opening by the American Sheet & Tin Plate Co. of its books for first quarter and first half of 1921 business. Specifications are coming in well against tonnage of all kinds of tin plate, save for containers for condensed milk, but interest on the part of buyers for their future requirements is small and demands for early tonnage have practically disappeared. Buyers who can use sizable lots of stock items are having no trouble obtaining them at 7.50c. Indications are that the leading interest will hold to the present price of \$7 per base box, and if this eventuates the independent manufacturers will have to name the same price on domestic business. Export demands are utterly lacking, and the market is weak. Few sales are taking place, and it is believed that few makers would pass up a chance for sales at \$9.

We now quote tin plate to domestic consumers at \$7 to \$8.50 base box; stock items, \$7.50 to \$8.50, and for export, \$9 to \$10 per base box, all f.o.b. Pittsburgh.

Steel Rails.—Independent prices slowly are settling down toward a 3c. basis for 25-lb. and 45-lb. sections. One company continues to quote 3.50c. and another 3.25c., but the latter will not refuse business at 3c. There seems to be a fair demand, but supplies are ample for all requirements.

We quote 25 to 45-lb. sections from 2.45c., the price of the Carnegie Steel Co., to 3c. to 3.50c., the range of the independent makers rolling from new steel; 16-lb. and 20-lb. sections are priced 4½c. per 100 lb. higher than the base sizes, 12-lb. and 14-lb. sections 9c. per 100 lb. above base and 8-lb. and 10-lb. sections 13¼c. per 100 lb. above base. Standard sections, 50 lb. and heavier, are quoted by the Carnegie Steel Co. at \$45 for Bessemer and \$47 for open hearth stock and by independent mills from \$55 to \$65 for Bessemer and \$57 to \$67 for open-hearth rails.

Iron and Steel Bars.—Although a few independent makers still are quoting 3.25c., the fact that the demand is extremely limited, and that one or two of the large independent companies are quoting 3c. makes the market hardly quotable at higher than the latter figure. A Valley producer who has been quoting 3.50c., base, recently, announces a reduction to 3.25c., the cut to apply on any unfilled orders on the book of that company. The market is extremely dull on concrete reinforcing bars, and while 3.50c. is the quotation of several makers, this price is not easily or readily obtained. Iron bars dull and unchanged.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 3.25c. at mill, prices depending entirely on the buyer and the delivery wanted. We quote reinforcing bars, when rolled from billets, at 3.25c. to 3.50c. and from old steel rails at 3c. at mill. We quote common iron bars at 4.15c. to 4.50c. and re-rolled iron bars at 5c. to 5.50c. in carloads, f.o.b. mill, Pittsburgh.

Hot-Rolled and Cold-Rolled Strips.—Independent makers are holding to 8c., base, for cold-rolled and 5c. for hot-rolled strips, and there is not much disposition to shade these quotations for the reason that demands are exceedingly light, and doubt exists whether a cut in prices would stimulate business. It is reported that some speculative holdings of cold-rolled strips have been offered at 7.50c., but so far as can be learned none of the manufacturers is so desperately in need of business as to name such a quotation. While cancellations and suspensions are still coming in, they are on a dwindling scale, and it is believed that the end of them is near. The American Steel & Wire Co. price on cold-rolled strips remains at 6.25c., base.

Nuts, Bolts and Rivets.—New demands are few and small and in view of the fact that makers have had substantial cancellations and suspensions, the situation is growing easier. Fairly prompt deliveries now are being promised on large bolts, and it is believed that between now and the end of the year the situation will be easier in smaller sizes, due to the belief that deliveries on rods and drawn wire will increase considerably in that period. Little or no change is observed in prices or demands except that the higher prices have pretty well disappeared as a basis of business.

Sheets.—A Valley producer of sheets who took last quarter contracts on the basis of 7c. for black sheets, and 8.50c. for galvanized, has made a voluntary revision of \$10 per ton on such bookings to 6.50c. on black sheets and 8c. for galvanized sheets. No such course has been pursued by other makers, but a number of them, the bulk of whose business was with the automobile industry, and who have sustained heavy suspensions, are seeking business for early delivery to keep going and tonnages are available at \$10 per ton below figures named by the company which revised its contracts. One Pittsburgh district independent has put out a fairly extensive stock list, in which he names 6c. for black sheets, 7.25c. for galvanized and 5c. for blue annealed. Unverified reports have it that tonnages of galvanized sheets have been sold as low as 7c. base. Business generally is at a very low ebb, and specifications from the automobile industry still are extremely light. There also has been some contraction in specifications from stove and range manufacturers lately. Independents report operations around 75 to 80 per cent of capacity, while the American Sheet & Tin Plate Co., because of a continued shortage of steel, has been averaging about 75 per cent operation of its sheet mills

in the past week. Nothing yet has come out as to the probable date that the leading interest will open its books for first half of 1921 business, but expectations are that the opening will come between Dec. 1 and Dec. 15. Indications are that the company will hold to its present price basis of 4.35c. for black, 5.75c. for galvanized and 3.55c. for blue annealed.

Hoops and Bands.—Independent quotations take a wide range. One company which is only an occasional producer is quoting the usual differential of 70c. per 100 lb. over merchant bars, and since its price on bars is 3c., this makes the hoop and band base 3.70c. However, this company does not roll down into the lighter gages and the price hardly is typical of the market on material as light as hoops. Other makers are quoting from 4c. to 5c., with little business being done at either figure. The Steel Corporation base remains at 3.05c.

Spikes.—Recent inquiry for 15,000 kegs of standard spikes from the Atchinson, Topeka & Santa Fe Railroad has been withdrawn, but the Baltimore & Ohio Railroad has just closed for 15,000 kegs with a Pittsburgh maker, the price being 4c., which appears to be maximum against sizable orders from the railroads. Makers have fair sized backlogs, but are promising deliveries against new business in three to four weeks. They are more heavily committed on small spikes and deliveries are not being promised until after the first of the year on new orders. Prices are given on page 1364.

Iron and Steel Pipe.—The past three weeks have been marked by the placing with independent manufacturers of more business than they have had before in some time. The recent pause in buying simmers down to a protest against the payment of premiums by legitimate distributors. Independent manufacturers have opened their books for tonnages for delivery next summer and it may be said that they now are scheduled full up to Aug. 1. The National Tube Co. still is running as full as it is physically possible, but has not been able to make any reductions in its accumulated stocks. Seemingly, the recent modification of Interstate Commerce Commission order No. 20, diverting gondola cars with sides up to 42-in. to general freight service has not yet helped the makers of pipe, most of whom still report a poor distribution. Discounts are given on page 1364.

Cold-Finished Steel Bars.—Orders are few and involve extremely small tonnages. Since there has been very general cancellation of orders carrying prices of 4c. and higher, the backlog of most producers to-day consists of business placed at or around the old base of 3.60c. Cancellations are not being generally accepted and are being refused if any of the tonnage which buyers seek to cancel has started through the mills. We note a small sale for prompt delivery at 4.25c. and that figure is being named by practically all makers against new business and probably will be adhered to until there is a definite decline from 3c. in the independent price of hot rolled bars. The American Steel & Wire Co. holds to 4c. base for cold finished steel bars.

Skelp.—In addition to the inquiry from the National Tube Co., which is for approximately 15,000 tons of universal skelp or plates for large pipe, a fair number of expert inquiries is coming out. Among the latter was one for 1000 tons from Great Britain for the narrower sizes, presumably for butt-weld pipe. There seems to be very little available tonnage in skelp and the market is relatively firm. On domestic business, all makers are quoting 3.25c. Pittsburgh for grooved skelp, while the export price is 4c. Pittsburgh.

Chain.—Makers still are holding to 7.25c. base for 1-in. proof coil steel chain. There has been a considerable decline in demand and lower prices appear to be ahead, at least on the sizes made from steel bars which are more plentiful and less costly than they were a short time ago. Chain makers complain of the difficulty in securing shipments of drawn wire and wire rods against their contracts, and the explanation probably is that chain wire and rods are of special analysis and have not been getting full attention of producers. This situation probably means the maintenance for a time of present prices on the smaller sizes of chain.

Cut Nails.—LaBelle Iron Works has made a reduction of \$5 per ton and now is quoting 6c. f.o.b. Wheeling for carload lots and 6.25c. for less than carload lots. This company has not yet adopted the new card of extras now used by most producers and which follows the classification of extras on wire nails.

Old Material.—The market has yielded sharply on practically every grade of old material, but the new prices are entirely nominal and are based solely on sales of tonnages which shippers have had to move promptly to save demurrage charges. At least three of the independent steel companies in the Pittsburgh district and two in the Valley have shut off all shipments against contracts and those companies which still are accepting deliveries on orders are out of the market completely for fresh supplies and are watching carefully that shippers do not attempt to overship. As shipments cannot be stopped fully or promptly from originating points, a good deal of material is falling back on the hands of dealers in this district. They are finding it almost impossible to interest melters at any price, although we note one sale of 2000 tons of heavy melting grade to a Wheeling district steel company, at \$23.50 delivered, while dealers are caught up so completely on their orders that the usual demand for the covering of sales is lacking to-day. Some dealers say that the steel works grades could not be given away to-day. Declines in prices as compared with those of a week ago run from \$1 to \$3 per ton, but it must be stated that if any of the melters, either steel works or foundries, were to put out an inquiry, no tonnages would be available at the new quotations. Decline in the demand for concrete reinforcing bars finds full reflection in the price of rerolling rails, which have been further depressed by the fact that the steel manufacturers, rolling light rails from new billets, are competing actively on prices with makers rolling from old standard sections.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, deliv.	\$23.00 to \$23.50
No. 1 cast for cupolas	35.00 to 35.50
Rerolling rails, Newark and Cambridge, O.; Cumberland, Md.; Franklin, Pa., and Pittsburgh	34.00 to 35.00
Compressed sheet steel	20.00 to 21.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh district	15.50 to 16.00
Railroad knuckles and couplers	25.00 to 26.00
Railroad coil and leaf springs	25.00 to 26.00
Railroad grate bars	25.00 to 26.00
Low phosphorus melting stock (bloom and billet ends, heavy plates, ½-in. and heavier)	31.00 to 32.00
Railroad malleable	29.00 to 30.00
Iron car axles	50.00 to 51.00
Locomotive axles, steel	40.00 to 41.00
Steel car axles	35.00 to 36.00
Cast iron wheels	38.00 to 39.00
Rolled steel wheels	25.00 to 26.00
Machine shop turnings	15.00 to 15.50
Sheet bar crop ends (at origin)	27.00 to 28.00
Heavy steel axle turnings	20.00 to 21.00
Short shoveling turnings	17.00 to 18.00
Heavy breakable cast	30.00 to 30.50
Stove plate	25.50 to 26.00
Cast-iron borings	18.00 to 18.50
No. 1 railroad wrought	27.00 to 28.00

Coke.—A slightly steadier tone has developed in this spot market for beehive oven coke and it is not possible to quote any further recession from the prices of a week ago on standard grade fuel. There have been a couple of lapses in car placements in the past few days and foggy weather, attended by light snowstorms, has somewhat hampered operations on the railroads. Although the demand is light, spot offerings are not so excessive this week as they had been during the past few weeks. The market on furnace grades is fairly well defined at \$8 to \$8.50 and \$9 to \$9.50 for 72-hr. fuel. The bulk of the business, however, is nearer the lower than the higher quotation. Producers whose coke runs high in sulphur have had considerable difficulty in making sales at higher than \$7.50, and in some instances have gone as low as \$7 in order to effect sales. Coke of this character usually passes as standard in times of shortages, but now that the furnaces are not suffering badly for supplies, they are more exacting in their fuel requirements and freely reject tonnages that do not come within the standard

specifications. Business in future requirements has come to a standstill and there is no basis for quotations of any sort, but it is believed that operators to-day would not refuse \$9 for furnace grade or \$10 for foundry coke on first half of 1921 tonnages. In fact, operators have sought contracts at these prices, but they have had no response. It would not be surprising if pig iron went to \$30 on the present swing and in that event producers would expect to buy their coke somewhere in the neighborhood of \$6. The coal market has developed a slightly stronger tone for the same reasons that temporarily have halted the decline in coke prices and also because of a slight opening up in export demands.

Higher Wages for Sheet and Tin Mill Workers

WARREN, OHIO, Nov. 16.—For the November-December period, sheet mill workers operating under the sliding scale of the Amalgamated Association of Iron, Steel and Tin Workers will receive a wage advance of 3 per cent and tin mill employees an increase of 7½ per cent, as a result of the bi-monthly examination of sales sheets.

The actual average invoiced price of Nos. 26, 27 and 28 gage plain sheets shipped during the preceding 60-day period was found to be \$5.80 per 100 lb., as compared with \$5.70 two months before. This two-point advance on the card rate entitled workers to a 3 per cent raise, as the tonnage rate increases 1½ per cent for each member of the crew for each 5c. per 100-lb. advance above the base of \$2.15. Under the new rate, sheet workers will be paid 109½ per cent above the base.

Average price of a box of 100 lb. of coke tin plate prime sheets was disclosed at \$7.75, an increase from \$7.40, which had prevailed at the last three bi-monthly examinations, and represents an increase of 7 points on the card. Tin mill workers are increased 1½ per cent for each 5c. increase in the selling price and will be paid 95½ per cent above base under the new rate.

President M. F. Tighe acted for the Amalgamated Association and A. N. Flora, vice-president Trumbull Steel Co., for the Western Sheet and Tinplate Manufacturers' Association.

It is the expectation, however, that the new card represents the peak and that subsequent examinations will disclose lower selling prices for both sheets and tinplate.

B. Floersheim & Co., Pittsburgh, has received the contract for the high pressure pipe for the blast furnace now under construction for the Trumbull-Cliffs Furnace Co., Warren, Ohio. The contract includes piping for the boiler house, power house, and blast furnaces, as well as the necessary auxiliary piping. The same firm reports a contract for the piping for the new Franklin and Rosedale plants of Cambria Steel Co., Johnstown, Pa.

Company officials and the general public in fitting manner on Nov. 5 celebrated the opening of a large new addition to the General Electric Co., Windsor, Conn., plant, fully 1300 attending. Machinery is being installed on the first two floors, consequently the celebration was held on the third floor.

W. C. Reilly, general superintendent of the Youngstown Sheet & Tube Co., Youngstown, Ohio, announces that electric drives will be installed for the company's sheet mills at a cost of \$200,000. Equipment has been ordered. The units will be suspended part at a time for the installation.

The Detroit Iron & Steel Co., Detroit, blew out its "A" furnace Nov. 10. This furnace will be relined and given a complete overhauling. Consequently, it will not be ready to resume operations for four or five months.

Chicago

CHICAGO, Nov. 16.

In the absence of any turn in the demand, the market continues to weaken in most commodities. The leading local independent has met the Steel Corporation price on plates and shapes and is quoting 3c., f.o.b. mill, on mild steel bars. It is reported, however, that some business in mild steel bars has brought out quotations of 2.35c., Pittsburgh, by a few independents. One rail carbon steel bar mill has reduced its price to 3c. mill, and in view of the dearth of inquiry it is doubtful whether any business is moving at a higher quotation. Sheets have shown further signs of weakening and the maximum prices on bolts and nuts are practically nominal in this section. Further concessions of cast iron pipe are reported, but makers still adhere officially to their previous prices.

In the pig iron market, the consumer's chief interest is to reduce his stocks either through cancellations and suspensions or through resales. Producers' quotations have become largely nominal.

Current business reaction is making inroads on iron and steel production here. One of the local blast furnaces represented by the leading merchant iron seller is now idle, and it is possible that others may follow. The Inland Steel Co. has resumed operation of its plate mill but in its plants as a whole is employing only one-half its normal forces. The alloy steel department of the Interstate Iron & Steel Co. is practically down. The Illinois Steel Co. and the Wisconsin Steel Co. are operating on about the same scale as a week ago.

Pig Iron—Producers' quotations have become practically nominal inasmuch as the wants of consumers can be satisfied by resale material, which is available at lower prices. The leading steel interest, however, is still a factor in the market as it has several thousand tons, representing the remaining uncommitted tonnage of its Milwaukee furnace, which it is offering for first quarter at \$39 base for foundry, or slightly less than \$40 delivered Chicago. The prices governing resale transactions are diverse, but most of them fall between a range of \$40 to \$43 base Chicago for Northern foundry, and \$38 to \$40 base Birmingham for Southern. Copper free low phosphorus is to be had in resale lots at \$57 delivered, Chicago, the equivalent of \$50 Eastern furnace. Although the market is characterized by efforts on the part of consumers to cancel, suspend shipments, or resell, one sizable inquiry is before the trade, namely, an inquiry for 750 tons of foundry for first quarter shipment. Two or three good sized inquiries for malleable are also expected to develop within the next week. The curtailment in demand is reflected in the reduction in furnace operations. Numerous Southern furnaces are now idle and one of the local furnaces represented by the leading Northern merchant iron seller is out of blast. In the face of a light demand, there have been no changes in the quotations of Northern producers. The quotation on charcoal iron published below represents the range between resale and furnace prices. The other quotation largely represents resale offerings.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 70c. per ton.

Lake Superior charcoal, averaging sil. 1.50 (other grades subject to usual differentials), deliv. at Chicago...	\$53.50 to \$58.50
Northern coke, No. 1 sil. 2.25 to 2.75.	42.25 to 45.25
Northern coke foundry, No. 2, sil. 1.75 to 2.25.	40.00 to 43.00
Northern high phos.	40.00 to 43.00
Southern coke, No. 1 foundry and No. 1 soft, sil. 2.75 to 3.25.	47.67 to 49.67
Southern coke, No. 2 foundry, sil. 2.25 to 2.75.	45.92 to 47.92
Southern foundry, sil. 1.75 to 2.25.	44.67 to 46.67
Malleable, not over 2.25 sil.	40.50 to 43.50
Basic	40.00 to 43.00
Low phos. Eastern furnace (copper free)	50.00
Silvery, 7 per cent.	55.32 to 58.32

Plates—Although the leading local independent and at least one outside mill are now meeting the Steel

Corporation price, other independent producers are apparently resisting any reduction under 3c., Pittsburgh. It is doubtful, however, whether any business is being done in this territory on the 3c. basis. Demand is light, although a number of car inquiries are active. Of the railroads now in the market, the Louisville & Nashville and the Norfolk & Western cars will require 30,000 to 35,000 tons of steel. Owing to reductions in prices by two important jobbers, local warehouse prices are now on a uniform basis of 3.78c. for plates out of stock. Mill quotation is 2.65c. to 3c. Jobbers quote 3.78c.

The mill quotation is 2.65c. to 3.25c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.78c. to 4.28c. for plates out of stock.

Ferroalloys—Resale material dominates the market in ferromanganese and spiegeleisen and producers' quotations have become purely nominal.

We quote 75 to 80 per cent ferromanganese, seaboard, \$165 to \$170; resale, \$150 to \$160, delivered; 50 per cent ferrosilicon at \$85, delivered; spiegeleisen, 18 to 22 per cent, resale, \$65, furnace.

Structural Material—With an independent source of supply at the Steel Corporation price, it is doubtful whether much business is being closed at a higher quotation in this district. Mills which were adhering to 3.10c., Pittsburgh, on plain material a week ago, are now quoting 3c., but in the light of the situation here, even that price must be regarded as largely nominal. One of the few export inquiries received of late calls for 5000 tons of structural shapes for the Dutch East Indies. Owing to the paucity of new construction, fabricating shops are in need of work. The award of the steel for the local Federal Reserve Bank building, amounting to 9000 tons, has not yet been made. Jobbers' prices on structural shapes are now uniform as a result of a reduction by two important warehouses. Fabricating awards include:

Stroh Products Co., building, Detroit, 1292 tons, to American Bridge Co.

New public school, Chicago, 450 tons, to Vierling Steel Works.

Junior Orpheum Theater, Minneapolis, 1000 tons, to Minneapolis Steel & Machinery Co.

Osage River Bridge, Cole County, Mo., 383 tons, to Stupp Brothers.

Metal & Thermit Corporation, detinning building, San Francisco, 248 tons, to American Bridge Co.

High School, Fort Dodge, Iowa, 194 tons, to Crown Iron Works.

Standard Oil Co., office building, Milwaukee, 325 tons, to Federal Bridge & Structural Co.

Fairbanks, Morse & Co., Chicago, structural steel for coal and sand station, 210 tons.

The mill quotation is 2.45c. to 3.10c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.58c. to 4.98c. for materials out of warehouse.

Sheets—Although local producers are still booked ahead into next year, independent mills are generally in need of tonnage and with current demand light the advantage is with the buyer. On blue annealed the ruling independent price remains 5c. base, Pittsburgh, while black is available at 5.50c. One mill will take first quarter contracts in galvanized at 7.25c., Pittsburgh, and others have met that price in quoting on business for early delivery. The market is weak and prices are not well defined. The ruling warehouse quotations are now 6.13c. for blue annealed, 7.10c. for black and 8.60c. for galvanized.

Mill quotations are 4.35c. to 5.50c. for No. 28 black; 3.55c. to 5c. for No. 10 blue annealed, and 5.70c. to 7.25c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 6.13c.; No. 28 black, 7.10c.; No. 28 galvanized, 8.60c.

Bars—While inquiry for mild steel bars is light, requests for cancellations and extensions have abated considerably, indicating that most consumers desiring to reduce the tonnage coming to them have advised the mills to that effect. The leading local independent is taking orders when accompanied by specifications at 3c., Chicago, and in a few instances some mills have met the Steel Corporation price. In general, however, the ruling independent quotation is 3c. base, Pittsburgh, but this price is rapidly becoming nominal. The leading interest continues to take orders for indefinite delivery. Demand for rail carbon steel bars is light and

at least one producer is now quoting 3c., mill. Bar iron mills are still adhering to 3.75c., Chicago, but the appearance of new business would no doubt bring out lower quotations. Two leading warehouses have reduced their quotations on mild steel bars to the level of other important jobbers, making the price uniform for the city.

Mill prices are: Mild steel bars, 2.35c. to 3c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 3.75c., Chicago; rail carbon, 3c. to 3.50c. mill.

Jobbers quote 3.48c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.90c. for rounds and 6.40c. for flats and squares, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. on orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 4.38c. base.

Wire Products.—While the leading interest has received cancellations and suspensions in products made principally for the manufacturing trade, the demands upon its merchant department for wire nails, barbed wire and to a less extent plain wire are very heavy. Inquiry for fencing has fallen off on account of the season, but for some peculiar reason this does not hold true of barbed wire. Although independents are booking little business, they have not reduced prices. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 1364.

Rails and Track Supplies.—The leading local interest has not yet announced its rail prices for 1921, but notwithstanding that fact its commitments for next year total approximately 1,000,000 tons. Many of the rail contracts which have been closed provide also for complementary track fastenings. Inquiry for track fastenings for early delivery has fallen off markedly. Some observers are of the opinion that should the demand revive, independents might make concessions under their present prices. One mill quoted 3.25c., Pittsburgh, on an export inquiry for 5000 tons of tie plates and lost the business to Germany. The Steel Corporation is in a position to make fairly prompt delivery on light rails and it is therefore doubtful whether independents are booking much business at higher prices.

Standard Bessemer rails, \$45 to \$55; open-hearth rails, \$47 to \$57. Light rails, 2.45c. to 3c., f.o.b. makers' mills.

Standard railroad spikes, 3.35c. to 4c., Pittsburgh. Track bolts with square nuts, 4.60c. to 5c., Pittsburgh. Steel tie plates, 3c. to 3.50c. and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. f.o.b. makers' mills.

Cast Iron Pipe.—There are further reports of price shading, but officially at least all makers are still adhering to the quotations published below. Montgomery County, Ohio, has awarded 1250 tons for a water supply line, to a Dayton general contractor who will sublet. Muskegon Heights, Mich., has let 400 tons to the American Cast Iron Pipe Co.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$88.10; 6-in. and above, \$83.10; class A and gas pipe, \$4 extra.

Bolts and Nuts.—Inquiry is diminishing and there is such a diversity of prices that published quotations mean little. The advanced prices announced by some makers about Sept. 1 are practically nominal so far as this territory is concerned. On large machine bolts frequent concessions under the lower quotations published on page 1364 are reported, but small machine bolts are still strong and are in some instances commanding the higher prices. Although producers in this district still have a fair backlog, heavy cancellations have been received recently from the agricultural implement industry. Cancellations from the automotive industry have abated considerably.

Jobbers quote structural rivets, 5.08c. to 5.73c.; boiler rivets, 5.18c. to 5.83c.; machine bolts up to $\frac{3}{4}$ x 4 in., 30 per cent off; larger sizes, 20 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 20 off; larger sizes, 15 off; hot pressed nuts, square tapped and hexagon tapped, list price; blank nuts, list price; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras are unchanged.

Old Material.—With demand limited, prices are weak and ill-defined and further recessions in some grades have occurred. Although scrap has dropped to a low level, many consumers are of the opinion that the bottom has not yet been reached. Railroad offerings include the Grand Trunk Western 3000 tons, the St. Paul 2000 tons, the Northern Pacific 1500 tons, the

Great Western 500 tons, and the Michigan Central a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$28.50 to \$29.00
Relaying rails	45.00 to 50.00
Car wheels	33.00 to 33.50
Steel rails, rerolling	22.50 to 23.00
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	18.50 to 19.00
Frogs, switches and guards, cut apart	18.00 to 18.50
Shoveling steel	22.00 to 22.50
Low phos. heavy melting steel	13.00 to 13.50
Drop forge flashings	

Per Net Ton	
Iron angles and splice bars	28.50 to 29.00
Steel angle bars	18.00 to 18.50
Iron arch bars and transoms	30.00 to 30.50
Iron car axles	36.00 to 36.50
Steel car axles	22.50 to 23.00
No. 1 busheling	16.50 to 17.00
No. 2 busheling	10.00 to 11.00
Cut forge	16.50 to 17.00
Pipes and flues	12.00 to 12.50
No. 1 railroad wrought	16.50 to 17.00
No. 2 railroad wrought	16.50 to 17.00
Steel knuckles and couplers	18.50 to 19.00
Coil springs	21.00 to 21.50
No. 1 cast	22.00 to 23.00
Low-phos. punchings	19.50 to 20.00
Locomotive tires, smooth	13.00 to 14.00
Machine shop turnings	8.00 to 8.50
Cast borings	10.50 to 11.00
Stove plate	22.00 to 22.50
Grate bars	16.50 to 17.00
Brake shoes	14.50 to 15.00
Railroad malleable	19.50 to 20.00
Agricultural malleable	19.50 to 20.00
Country mixed	11.00 to 12.00

Boston

BOSTON, Nov. 16.

Pig Iron.—The market is dull and uninteresting. Furnaces are making no serious effort to place iron, while sales of resale stock through local houses since last reports have amounted to less than 10 cars. Three cars of Virginia, silicon 2.25 to 2.75, sold at \$43.25 furnace or \$49.58 delivered, the largest number sold through any one house. There appears to be less resale Buffalo and eastern Pennsylvania iron offered, presumably because the tonnage of deferred shipments from furnaces in these districts has increased noticeably since Nov. 1. Recent sales have been largely of Virginia irons. New England foundries are even less active than they were a week ago, and several of them are further reducing working forces. Resale delivered pig iron prices follow:

Eastern Pa., sil. 2.25 to 2.75	\$48.31 to \$49.31
Eastern Pa., sil. 1.75 to 2.25	47.06 to 48.06
Buffalo, sil. 2.25 to 2.75	48.71 to 49.71
Buffalo, sil. 1.75 to 2.25	47.46 to 48.46
Virginia, sil. 2.75 to 3.25	51.58 to 53.58
Virginia, sil. 2.25 to 2.75	49.83 to 51.83
Virginia, sil. 1.75 to 2.25	48.53 to 50.58
Alabama, sil. 2.75 to 3.25	52.66 to 55.66
Alabama, sil. 2.25 to 2.75	50.91 to 53.91
Alabama, sil. 1.75 to 2.25	49.66 to 52.66

Coke.—A spread of \$1 to \$2 a ton in delivered prices on Connellsville and New England Coal & Coke Co. spot foundry coke has created a little wider interest in the former, foundries since last reports having purchased several cars at \$11, \$11.50, \$12 and \$12.50 f.o.b. Connellsville ovens, or \$17.20 to \$18.70 delivered, as compared with \$19.20, the New England Coal & Coke Co. price. The general market for foundry coke, however, is quiet. Producers are anxious for spot business, but apparently are not so for 1921, except on a sliding scale basis. The New England Coal & Coke Co. is repairing a 50-oven battery, and another has been put on domestic sizes, leaving 300 producing foundry coke.

Finished Material.—Independent mill representatives are endeavoring to hold the market on bars at $3\frac{1}{4}$ c. f.o.b. Pittsburgh, but bars as well as shapes and plates can be had for 3c. flat. Business, however, is almost at a standstill, the large consumers of finished material being well covered, some of them into next spring. No structural awards, involving 100 tons or more, are reported this week. New England railroads are still in the preliminary stages insofar as placing orders for 1921 spring rail and plate requirements is concerned. Warehouses report more "shopping" going on than has been the case before in more than a

year. Brass rods, wire, sheets and tubes have declined 1c. on the base price. Iron prices are reported as barely steady and steel quotations steady, as follows:

Jobbers now quote: Soft steel bars, \$5 to \$7.50 per 100 lb. base; flats, \$6 to \$6.35; concrete bars, \$5; tire steel, \$6 to \$6.50; spring steel, open hearth, \$10; crucible, \$15; steel bands, \$8 to \$8.25; steel hoops, \$9; toe calk steel, \$7.50; cold-rolled steel, \$8 to \$10; structural, \$4.50 to \$6.50; plates, \$4.75 to \$5.25; No. 10 blue annealed sheets, \$7.25; No. 28 black sheets, \$9.15; No. 28 galvanized sheets, \$10.50; refined iron, \$5 to \$7.50; best refined, \$7; Wayne, \$9.50; band iron, \$8; hoop iron, \$9; Norway iron, \$20.

Old Material.—The market is unsettled. The volume of buying, both by consumers and dealers, has dropped to small proportions, cancellations and rejections of contract shipments by consumers have materially increased, and prices are lower with every indication that the market has not reached the bottom. Strictly No. 1 machinery cast, which a week ago sold at \$40 delivered in a limited way, to-day is difficult to move at \$37 delivered. The ratio of delivered contract machinery cast accepted by foundries is about one car in three. No. 2 cast apparently is not wanted at any price, and quotations are nominal. Stove plate is about \$3 lower on forced sales due to rejections. A few hundred tons of railroad wrought at \$21 f.o.b. shipping point have changed hands recently, which represents a decline of \$2 a ton. A stoppage of buying of heavy melting steel has resulted in a drop of approximately \$2 in the market. Railroad malleable purchases against old contracts hold prices steady and the market for turnings is relatively firm, but quotations on most other kinds of scrap are anywhere from 50c. to \$3 a ton lower. Old material is quoted at the local yards as follows:

No. 1 heavy melting steel.....	\$15.00 to \$15.50
No. 1 railroad wrought.....	20.00 to 21.00
No. 1 yard wrought.....	17.00 to 18.00
Wrought pipe (1-in. in diameter, over 2 ft. long).....	14.00 to 15.00
Machine shop turnings.....	12.00 to 12.50
Cast iron borings.....	14.00 to 15.00
Heavy axle turnings.....	12.00 to 13.00
Blast furnace borings and turnings.....	11.00 to 12.00
Forged scrap.....	10.00 to 11.00
Bundled skeleton.....	10.00 to 11.00
Street car axles.....	26.00 to 27.00
Car wheels.....	32.00 to 33.00
Machinery cast.....	33.00 to 34.00
No. 2 cast.....	31.00 to 32.00
Stove plate.....	21.00 to 22.00
Railroad malleable.....	25.00 to 26.00
Rerolling rails.....	26.00 to 27.00

Buffalo

BUFFALO, Nov. 15.

Pig Iron.—Resale iron continues to be practically the sole medium of transactions made now, and the past week these sales have fallen off considerably. One producer who has been doing a great deal of reselling recently reports having sold less than 500 tons. Most of this was sold around \$40, though as high as \$45 was obtained for some of it. Another producer sold about 200 tons of high sulphur iron at \$40. Susquehanna furnace iron is now on a \$45 base, but no selling has yet been noticed. Inquiry for resale is discouraged as much as possible by one producer, but it is extremely difficult to sell furnace iron in the open market at this time. One inquiry for resale iron noted was for 200 tons.

We quote f.o.b. Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$43.00 to \$48.25
No. 2 X foundry, 2.25 to 2.75 sil.....	41.25 to 44.50
No. 2 plain, 1.75 to 2.25 sil.....	40.00 to 43.25
Basic.....	38.00
Malleable.....	42.00
Lake Superior charcoal.....	58.00

Finished Iron and Steel.—The general situation appears about the same except that there has been a slight flurry of inquiry reported by some mills. One sales agency reported that it has had during the past week more inquiry for mill products than for three weeks. Opinion is divided as to whether this revival of interest is curiosity on the part of purchasers or whether it signifies real business. Actual orders are still very scarce. Indications are that stocks are getting comparatively low with fabricators. Representatives of mills who

have just returned from Canada say sentiment is considerably more optimistic there than on this side. Canadian business, according to these informants, expects a considerable renewal of demand in the spring. The inquiry for plates and structural material is a bit heavier this week. Tank plates and universal plates are being sought, as are car plates. The asking price of plates and bars is from 3c. to 3.25c. Shapes have settled around 3.10c. and there is no business being done at less than 3c. Shippers have been given permission to use open equipment with 42 in. sides and this has made cars easier. John W. Cowper Co., Inc., announces the acceptance of a contract for a new plant for the Stanley Steel Welded Wheel Corporation, North Tonawanda, N. Y. About 70 tons of structural steel will be required. Bids for the new Statler hotel will be opened in New York this week. About 8000 tons of steel are involved.

Warehouse prices f.o.b. Buffalo are: Steel bars, 4.65c.; shapes, 4.15c.; plates, 4.30c.; No. 10 blue annealed sheets, 7.15c.; No. 28 black sheets, 8.50c.; No. 28 galvanized sheets, 10.60c.; hoops, 6.60c.

Coke.—There is very little demand for either the foundry or furnace grade. Supplies are plentiful. Foundry can be had at ovens for \$11.50 to \$12 and furnace about \$3 under that.

Old Material.—Continued softness is featuring the market, with sales very low, and inquiry almost negligible. Mills are not eager to buy tonnage. Small tonnages have been sold to mills for immediate delivery, but these have been infrequent. Mill men are conscious that the market is dropping and they believe it will go down still further. Twenty-two dollars has been offered for heavy melting steel. There has been some inquiry for turnings from the Philadelphia district. These inquiries come from dealers. Almost all the grades in the list have suffered a further decrease in price during the week.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades.....	\$22.00 to \$23.00
Hydraulic compressed.....	19.00 to 20.00
Low phos., 0.04 and under.....	32.00 to 32.50
No. 1 railroad wrought.....	28.00 to 29.00
No. 1 machinery cast.....	36.00 to 37.00
Iron and steel axles.....	36.00 to 37.00
Car wheels.....	36.00 to 37.00
Railroad malleable.....	28.00 to 29.00
Machine-shop turnings.....	13.50 to 14.50
Heavy axle turnings.....	18.50 to 19.50
Clean cast borings.....	16.50 to 17.00
Iron rails.....	30.00 to 31.00
Locomotive grate bars.....	21.00 to 22.00
Stove plate.....	25.00 to 26.00
Wrought pipe.....	18.00 to 19.00
No. 1 busheling.....	17.50 to 18.50
Bundled sheet stampings.....	14.00 to 15.00

Cincinnati

CINCINNATI, Nov. 15.

Coke.—Connellsville furnace coke was offered in this market Monday at \$7.50, and foundry at \$8. Many operators in the Wise County field are shutting down their ovens and selling their coal. Some sales of New River foundry coke are reported at \$15.

Pig Iron.—The past week was probably the dulllest experienced in the local pig iron market for many years. There is almost a total lack of inquiries and what iron is being figured on consists chiefly of carload lots of special irons to complete mixtures. Sales are almost wholly confined to resale iron, a large tonnage of which is available at prices several dollars under the market levels. Until this iron is absorbed, Northern furnaces are not inclined to quote on the small volume of business offering, and are naming a nominal quotation of \$45, furnace. It is admitted, however, that a fair-sized tonnage could be placed at \$43, and for this reason a higher quotation does not appear justified. On Southern iron, three prices are named, \$38, \$40 and \$42. One Southern interest intimated during the week that it would have some iron to sell at \$40, but it is understood that no sales were made. At least one in-

terest, outside of the Tennessee company, is reported to be willing to book orders at the \$38 price, but several Southern producers are still holding to the \$42 figure, feeling that, with the market in its present condition, lower prices would not attract buyers. Sheffield furnace in Alabama was blown in on Nov. 10, and Etna furnace in southern Ohio on Nov. 15. The monthly meeting of the American Pig Iron Association will be held Nov. 18 at Nashville, Tenn.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base price)	\$42.50 to \$46.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	43.75 to 47.75
Ohio silvery, 8 per cent sil.	60.52
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	45.52
Basic northern	39.52
Malleable (nominal)	46.02

Finished Material.—The market for finished steel products has assumed a waiting attitude. Very few inquiries are coming out, and these only for sufficient tonnages to meet what might be termed immediate needs. There have been no price reductions on bars, shapes or plates reported to date, but it is generally understood that an attractive order for bars would be quickly taken at from 2.90c. to 3c., Pittsburgh, as against 3.25c. prevailing on small lots selling to-day. The sheet market is slightly weaker, and blue annealed is available at 5c. for No. 20, black sheets at 6.50c. and galvanized at 7.75c. Reports that even these prices can be shaded on attractive tonnages are current, but no inquiries have come out to test the market. The demand for sheet bars and billets has practically ceased, and steel plants in this territory have in some cases reduced their operations at the producing end about 50 per cent. Warehouse business is not so active as it has been, and while some orders are being received, these are generally for less than carload lots. Local warehouses are contemplating reducing their prices and it is expected that an announcement will be forthcoming during the week.

Steel bars, 4c. base; shapes, $\frac{1}{4}$ -in. and heavier, 4.10c.; plates, 4.50c.; cold rolled rounds, $1\frac{1}{2}$ -in. and over, 6.25c.; cold rolled rounds, under $1\frac{1}{2}$ -in., and flats, squares and hexagons, 7c. base; steel bands, 6c. base; No. 10 blue annealed sheets, 7c. base; Nos. 14 and 16 blue annealed sheets, $7\frac{1}{2}$ c. base; black sheets, 28-gage, 8c.; galvanized sheets, 28-gage, 9c.; wire nails, \$1.50 per keg base.

Tool Steel.—Some manufacturers of high speed steel have announced reductions of 5c. per lb. on their product, and high speed steels containing 18 per cent tungsten are now quoted at \$1.20 per lb. The market is quiet, and orders received are for small lots to meet immediate requirements.

Old Material.—The scrap market shows no change. Dealers are still shipping on old contracts, many of which are nearing completion. Very little new business is offering, and sales generally consist of scattered carload lots. Prices still have a downward tendency, and, according to dealers, scrap can be purchased to-day at almost their own prices. The Norfolk & Western Railroad is offering 3000 tons.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets	\$10.50 to \$11.50
Old iron rails	23.50 to 24.50
Relaying rails, 50 lb. and up	47.50 to 48.50
Rerolling steel rails	26.50 to 27.50
Heavy melting steel	17.50 to 18.50
Steel rails for melting	19.50 to 20.50
Car wheels	31.50 to 32.50

Per Net Ton	
No. 1 railroad wrought	18.50 to 19.50
Cast borings	8.50 to 9.00
Steel turnings	7.00 to 7.50
Railroad cast	23.50 to 24.50
No. 1 machinery	26.50 to 27.50
Burnt scrap	19.50 to 20.50
Iron axles	32.00 to 32.50
Locomotive tires (smooth inside) ..	18.00 to 19.00
Pipes and flues	11.50 to 12.00
Malleable cast	19.50 to 20.00
Railroad tank and sheet	11.50 to 12.00

New York

NEW YORK, Nov. 18.

Pig Iron.—New low points have been touched by resale iron, the lowest being in the South where it is reported that \$34 for No. 2 has been done, but this lacks confirmation and \$38 is the lowest price ordinarily named. Reports from New England territory indicate that sales of Buffalo iron have been made in that section on the basis of \$38.50, Buffalo, for No. 2 plain, and in eastern Pennsylvania \$40.05 at furnace for No. 2X and \$39.75 for No. 2 plain, the differential being only \$1, are reported to have been done. While nearly all foundries are operating at considerably less than full capacity, a few are very busy and are urging shipment of pig iron. The furnaces are taking a decided stand against permitting contracts to be canceled. They are making reasonable concessions as to deliveries, but are positively refusing to cancel. Some of the furnaces are also refusing to ship iron from their yards or iron not yet made to buyers who have bought it on resales. It is contended that the furnace has legal right to keep the iron, as the contracts generally read that the sale is by the furnace to the melter. It is pointed out, however, that this contract might be evaded by having the iron sold in transit. It is noteworthy that most of the resale tonnages offered are small.

We quote for delivery in the New York district as follows, adding to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa., No. 1 fdy., sil. 2.75 to 3.25 ..	\$47.52 to \$50.52
East. Pa., No. 2X fdy., sil. 2.25 to 2.75 ..	45.77 to 48.77
East. Pa., No. 2 fdy., sil. 1.75 to 2.25 ..	44.52 to 47.52
Buffalo, sil. 1.75 to 2.25	46.16 to 48.16
No. 2 Virginia, sil. 1.75 to 2.25	49.16 to 50.16

Ferroalloys.—Practically no business is reported in the ferromanganese market. Quotations of both foreign and domestic producers continue nominally unchanged on the basis of \$170, seaboard. Resale alloy is available as low as \$150 and there is a belief that some British producers would be willing to make some sales on a basis of \$150, seaboard. In fact, there are some indications that portions of some British shipments already on the way may be available because of a desire on the part of consumers to be relieved of accepting the material. The spiegeleisen market is extremely inactive and there are inquiries for only a few carload lots here and there. The market is quotable at \$75, furnace, from first hands, but resale material can be obtained at a decided concession. There is no change in the manganese ore market, the quotation being nominal at 45c. to 50c. per unit, seaboard, for high-grade ore. The 50 per cent ferrosilicon market is unchanged at around \$80 per ton, delivered.

Finished Iron and Steel.—Requests for cancellations of both domestic and export steel orders are frequent and are a disturbing element, not only because of the loss of business, but because of the problem of meeting the situation. In a few instances prices on old orders have been revised to meet the views of buyers, and in this way the tonnage involved has been kept on the books. In general, the steel companies have permitted the cancellation of the ordinary contract tonnage, as has been the custom in the past, but the real difficulty is encountered when customers attempt to cancel specific orders. Lower prices are not coming out, chiefly for the reason that there is not enough attractive inquiry to encourage the steel mills to bid for business. Even an inquiry for 2000 tons of ship plates for Japan has failed to excite much interest for the reason that sellers have little confidence that the order will actually be placed at this time. A majority of the current inquiries are for quantities under 100 tons, but orders are few. Plates, shapes and bars are nominally quoted at 3c., Pittsburgh, by independent mills, but the sellers themselves do not know what they might be tempted to do on an attractive order. The railroads have apparently joined the strike of buyers, and in a few instances have withdrawn inquiries for cars, with the frank explanation that they look for lower prices. While the repair departments of the car plants are very

busy, the manufacturing departments have little to do. One large car company will shut down its Western plant within a few days. The only new car inquiry comes from the Minneapolis & St. Louis Railroad for 500 50-ton composite gondola cars. The Norfolk & Western inquiry may be acted upon this week. The principal railroad buying is of tie plates and angle bars, in which a fair business is being done at 4c., Pittsburgh, by some of the independent makers. Curtailment of operations continues among Eastern steel companies, and this curtailment extends to the dismissal of employees, both in offices and mills. For a municipal ferry boat, for which the shipbuilding contract has not yet been awarded, 800 tons of plates will be required. Bids have been asked on 8000 tons of steel for a Statler Hotel in Buffalo; 600 tons for an addition to the former Hotel Manhattan, New York, for the National City Co., 200 for bridges for the Philadelphia & Reading, and on Nov. 18, 600 tons for a hangar for the U. S. Army at Aberdeen, Md. Contracts awarded include: 950 tons for bridges for the Pennsylvania Railroad; 700 tons of industrial building work at Marcus Hook, N. J., 200 tons for an engine house for the Pennsylvania and 450 tons placed with the Lehigh Structural Steel Co., for the United States Fidelity & Guarantee Co., Baltimore.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.73c. to 3.38c.; plates, 3.03c. to 3.38c.; shapes, 2.83c. to 3.38c.; bar iron, flats, wider than 6 in., 5.38c., with half extras; light rounds, squares and flats, 5.88c., with full extras, and other sizes, 4.88c., with half extras.

Warehouse Business.—Practically all warehouses, including a prominent independent, have reduced prices of sheets, structurals, tank plates and steel bars to a lower level. The largest independent is now quoting the same prices as the Steel Corporation's warehouse schedule in Chicago, St. Louis and Detroit, but is parallel with other warehouses in New York and Buffalo. Quotations on No. 28 black sheets have dropped from 8.60c. per lb. to 8.10c. per lb., No. 28 galvanized from 9.85c. to 9.60c. per lb. and No. 10 blue annealed from 7c. to 6.15c. per lb. Soft steel bars are generally quoted at 4.15c. per lb. base and angles at 4.15c. per lb. base. Dealers in small lots of a few sheets are quoting blue annealed and black sheets 50c. per 100 lb. lower than last week and galvanized sheets at a 75c. per 100 lb. reduction. There is prospect of a reduction in open hearth spring steel and toe calk steel. Brass and copper conditions and prices remain unchanged. Shipments of pipe from mills have greatly increased. Prices of wrought iron and steel pipe are the same and the demand is active. We quote prices on page 1384.

High Speed Steel.—Producers still quote 18 per cent tungsten high speed steel at \$1.25 per lb., which is nominal. This price is shaded in many instances. A few fairly large export inquiries are in the market. A producer of a special grade of steel with low tungsten and high vanadium content has reduced its quotations from \$1.50 per lb. to \$1.40 per lb., but maintains \$1.25 per lb. for 18 per cent tungsten.

Cast-Iron Pipe.—Municipal inquiries from New England have started to come in and are expected to present a fair volume of business until March at least. Pipe makers are working at from 60 to 70 per cent of capacity and have enough orders to prevent price cuttings from becoming imperative. However, they say that if pig iron drops in price materially, cast-iron pipe prices will probably be lowered accordingly. Several inquiries involving many thousand tons come from abroad and will mean orders when the exchange situation improves. We quote, f.o.b. New York, 6 in. and larger, \$77.22; 4 in., \$87.22; 3 in., \$97.22, with \$2 additional for Class A and gas pipe.

Old Material.—Business is practically at a standstill and a few cancellations have helped to cause the absence of buying to fill old orders. A few sporadic sales give the idea of the irregular prices prevailing and the continually downward tendency. For instance, heavy melting steel has been sold to eastern Pennsylvania at \$18, delivered, making the New York price less than \$14. A broker bought some No. 1 machinery cast at

\$28.85, delivered near by. These low prices are usually where a dealer is very anxious to unload, most dealers preferring to hold for higher prices.

Buying prices per gross ton, New York, follow:

Heavy melting steel	\$15.00 to \$16.00
Rerolling rails	28.00 to 29.00
Relaying rails, nominal	55.00 to 56.00
Steel car axles	23.00 to 24.00
Iron car axles	38.00 to 39.00
No. 1 railroad wrought	21.50 to 22.50
Wrought iron track	17.00 to 18.00
Forge fire	10.00 to 11.00
No. 1 yard wrought long	19.00 to 20.00
Light iron	7.00 to 8.00
Cast borings (clean)	15.50 to 16.00
Machine-shop turnings	11.50 to 12.00
Mixed borings and turnings	10.00 to 11.00
Iron and steel pipe (1 in. diam. not under 2 ft. long)	14.00 to 15.00
Stove plate	20.50 to 21.50
Locomotive grate bars	20.00 to 21.00
Malleable cast (railroad)	21.00 to 22.00
Old car wheels	33.00 to 34.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	\$34.00 to \$35.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	33.00 to 34.00
No. 1 heavy cast, not cupola size	25.00 to 26.00
No. 2 cast (radiators, cast boilers, etc.)	25.00 to 26.00

Birmingham

BIRMINGHAM, Ala., Nov. 15.

Pig Iron.—Pending development that will shake a real market out of the box, the Birmingham independent merchant furnace operators still put up a quotation of \$42 on pig iron, silicon 1.75 to 2.25. As near no activity as possible was the iron business of the past week. There was not a ripple on the surface of things. One interest has not received an inquiry of any kind. Another quoted on carlots and heard no more of them. The quoted price was \$42. The most unique happening in the Birmingham iron trade yet forthcoming was this: An Eastern exporting house, which placed an order with a Birmingham maker for 2000 tons for last quarter delivery some time ago, lately tried to transfer this booking to a third party. In this quest he is understood to have offered it as low as \$38, but found no takers. He was to lose if he exported on account of foreign exchange and could not effect the transfer over here. He wound up by having the order cancelled on payment to the operator of \$4 per ton, or \$8,000. The iron had not been manufactured, so the maker is \$8,000 better off. The strategical position of Alabama pig iron is all right from a stocks standpoint. On Nov. 1 foundry stocks on yards were 71,000 compared with 64,000 on Oct. 1; warrants 1600 and unchanged; machine cast, 2562 against 75; basic, 7645 against 3864; total, 81,560 against 72,233. The slight increase over stocks the lowest on record in spite of a production 2000 tons in excess of that of September is noted with some interest. Production, it is understood, is to be decreased by the blowing out of two more furnaces in the near future. There seems to be a well-defined undercurrent to decrease manufacture rather than run the risk of making iron on a falling market.

We quote per gross ton f.o.b. Birmingham district furnaces, the Tennessee company included, as follows:

Foundry, sil. 1.75 to 2.25	\$38.00 to \$42.00
Basic	37.00 to 41.00
Charcoal	58.00

Cast Iron Pipe.—Water and gas pipe concerns report receipt of small routine orders for immediate requirements, but no real new business. The sanitary pipe trade is as dead as can be imagined. There is no new business and shops not idle are slowing up. Pipe prices are weak, but quotations are not ostensibly changed.

Coal and Coke.—Coke is easier at lower prices, contracts and spots having reached a common level of about \$12.50 from \$14 and \$16. Furnace coke is not quoted, but should sell under \$10 owing to the general weakness and diminishing demand. Union miners have ordered 1500 tents for the striking field, indicating determination to fight further. Tents will house those evicted from the company houses. Production is

very close to normal and more than sufficient for all steam coal purposes.

Old Material.—The scrap market is absolutely without feature. It is so stagnant that practically no effort is made to enlist interest. Quotations are nominal.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails.....	\$19.00 to \$20.00
Heavy melting steel.....	18.00 to 19.00
No. 1 cast.....	30.00 to 32.00
Car wheels.....	29.00 to 31.00
Tram car wheels.....	28.00 to 30.00
No. 1 wrought.....	19.00 to 20.00
Stove plate.....	20.00 to 21.00
Cast iron borings.....	9.00 to 10.00
Machine shop turnings.....	9.00 to 10.00

St. Louis

ST. LOUIS, Nov. 16.

Old Material.—The scrap market shows absolutely no life, there being no disposition either to buy or sell, while some of the largest interests are disposed to cancel orders and to reject material that does not come up to specifications strictly. The only list out was one of 2700 tons from the Pennsylvania, of which little more than 10 per cent was sold, the remainder being withdrawn because of the low prices offered.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails.....	\$27.00 to \$27.50
Old steel rails, rerolling.....	24.00 to 24.50
Old steel rails, less than 3 ft.....	18.50 to 19.00
Relaying rails, standard section, subject to inspection.....	40.00 to 45.00
Old car wheels.....	32.00 to 32.50
No. 1 railroad heavy melting steel scrap.....	17.00 to 17.50
Heavy shoveling steel.....	16.50 to 17.00
Ordinary shoveling steel.....	16.00 to 16.50
Frogs, switches and guards cut apart.....	17.00 to 17.50
Ordinary bundled sheet.....	9.50 to 10.00

Per Net Ton	
Heavy axle and tire turnings.....	10.50 to 11.00
Iron angle bars.....	25.00 to 25.50
Steel angle bars.....	17.00 to 17.50
Iron car axles.....	36.00 to 36.50
Steel car axles.....	24.00 to 24.50
Wrought arch bars and transoms.....	29.00 to 29.50
No. 1 railroad wrought.....	18.50 to 19.00
No. 2 railroad wrought.....	17.50 to 18.00
Railroad springs.....	17.00 to 17.50
Steel couplers and knuckles.....	17.00 to 17.50
Locomotive tires, 42 inches and over, smooth inside.....	16.00 to 16.50
No. 1 dealers' forge.....	15.00 to 15.50
Cast iron borings.....	9.00 to 9.50
No. 1 busheling.....	17.00 to 17.50
No. 1 boilers, cut to sheets and rings.....	12.50 to 13.00
No. 1 railroad cast scrap.....	26.00 to 26.50
Stove plate and light cast scrap.....	19.00 to 19.50
Railroad malleable.....	18.00 to 18.50
Agricultural malleable.....	17.00 to 17.50
Pipes and flues.....	12.00 to 12.50
Railroad sheet and tank scrap.....	11.00 to 11.50
Railroad grate bars.....	16.00 to 16.50
Machine shop turnings.....	7.00 to 7.50
Country mixed scrap.....	12.50 to 13.00
Uncut railroad mixed scrap.....	11.00 to 11.50
Horseshoes.....	20.00 to 21.00
Railroad brake shoes.....	16.00 to 16.50

Cleveland

CLEVELAND, Nov. 16.

Iron Ore.—There have been a number of suspensions of ore shipments the past week and the weather conditions have interfered with the movement. Hence November shipments will probably be less than have been expected. The blowing out of blast furnaces during the past two or three weeks has caused one large independent steel interst, operating its own mines, and some merchant furnaces that buy their own ore, to order shipments stopped because of the falling off in consumption. In some cases consumers have asked that ore that was scheduled to go direct to furnaces be placed on docks, as no additional space is available on stock piles, due to the furnaces going out. Owing to the severe weather the past few days ore has been badly frozen, and it has been necessary to steam practically all that has been shipped from upper lake ports. This delayed boats considerably and further delays were caused by severe storms on Lake Superior. Some of the boats operated by independent interests are being laid up this week and shipments during the next two weeks will fall off rapidly.

We quote delivered lower lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

Pig Iron.—The market shows no change except that it seems to be a little duller than during the few previous weeks. No improvement in the consumption is expected this year. There were further suspensions of shipments during the week and furnace stocks are growing more rapidly. No additional furnaces have been blown out, but several operated by local interests are likely to go out before the end of the year unless conditions improve. The supply of resale foundry iron is still in excess of the demand and furnaces generally so far are not attempting to meet resale iron prices. With the limited buying, the price situation is not clear and some producers say that they do not know what they would quote, should they get an inquiry. One local furnace has marked its price down \$2 to \$45 for No. 2, but admits that the reduction is to keep more in line with the actual market than with expectation of making sales at that price. One Valley furnace has made two or three small lot sales at \$44. There are unconfirmed reports of resale foundry iron being offered at \$36 and \$38, but \$40 and \$42 appear to better represent the asking price, although some foundries are asking for offers. A 400-ton lot of 8 per cent silvery iron is being offered for resale at \$53, or \$5 to \$7 below the furnace price. Some foundries are anxious to cancel low-priced iron instead of trying to find a market for it. A cancellation of 600 tons of \$36 low phosphorus iron is reported and one consumer asked a furnace to cancel \$31 foundry iron. Several sales of foundry iron, aggregating close to 5000 tons, are reported in the Michigan territory for delivery through the remainder of the year and first quarter, or through the first quarter only, at the price prevailing at the time of shipment. The largest new inquiry is for 500 tons of foundry iron from a western Pennsylvania consumer.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham:

Basic.....	\$40.46
Northern No. 2 fdy., sil. 1.75 to 2.25.....	43.96 to 45.96
Southern fdy., 2.25 to 2.75.....	45.92 to 49.92
Ohio silvery, sil. 8 per cent.....	56.36 to 61.36
Standard low phos., Valley furnace.....	54.00 to 55.00

Finished Iron and Steel.—Demand for finished steel has almost reached the zero point and sellers are comparing the present period of inactivity with that which existed immediately after the declaration of the world war and again after the signing of the armistice. Consumers are using up their stocks and buying only what they must have and delaying purchasing as long as possible, because of the downward trend of prices. Operations of some steel plants are likely to be further curtailed. The plant of the Central Steel Co., Massillon, is almost entirely shut down, and the United Alloy Steel Corporation, Canton, continues to operate five out of 14 open-hearth furnaces. The plant of the Cleveland Steel Co. is shut down and the Riverside Works of the Otis Steel Co. are still down. Independent mills have generally settled down to a 3c. price on steel bars, plates and structural material, but a new low price on plates has come from a local mill which has sold tank plates at 2.85c. While prices are showing fair resistance in view of the limited demand, it is uncertain what might develop in the way of lower quotations by independent mills, should an attractive inquiry come out. In structural lines, there is a fair amount of prospective work, but virtually everything is being held back for lower prices on all material that enters into building construction. Bids are being taken in Chicago this week on 3500 tons of structural material for the Keith Theater in Cleveland and the King Bridge Co. has taken 125 tons for Nickel Plate railroad bridges. The Belle Island bridge, Detroit, requiring 4500 tons of structural material and steel piling, has been held up and will probably not be placed for several months. Hard steel reinforcing bars continue to sag and have reached the 3c. soft steel bar price, but some mills are still asking 3.25c.

Coke.—The coke market is very dull. Some Wise County foundry coke, which has been cancelled, is being sold in this market at \$13 for prompt shipment. Con-

Connellsville foundry coke is quoted at \$9 to \$10, although slightly higher prices are asked by a few producers. We quote Connellsville furnace coke at \$8 to \$8.50.

Bolts, Nuts and Rivets.—There is little new demand for bolts and nuts, orders being confined to small lots and the market shows a weakening tendency. A local manufacturer has made a formal price reduction to \$40, 10 and 5 per cent discount for machine bolts with rolled threads, 40 and 5 for cut threads, 30 and 10 for larger and longer sizes, 30 and 10 for carriage bolts with rolled threads and 30 per cent for cut threads and larger and longer sizes. Some manufacturers are adhering to present prices, believing that business would not be stimulated now by reductions and being at present unable to determine what their costs will be during the first quarter. Local jobbers have large stocks of bolts and nuts and have reduced prices to 20 per cent discount for machine bolts and to 15 per cent on small and 12½ per cent on large carriage bolts, but are making lower prices on large lots. Rivet orders are very light, being mostly on specifications on old contracts. Present rivet prices are being maintained.

Small machine bolts, rolled threads, 25 to 10 per cent off list; same sizes in cut threads, 25 per cent off list; larger and longer sizes, 25 per cent off list; carriage bolts, smaller and shorter, rolled threads, 20 and 10 per cent off list; cut threads and larger and longer sizes, 20 per cent off list; lag bolts, 40 per cent off list; plow bolts, Nos. 1, 2 and 3 head, 25 per cent off list, the 20 per cent extra for other style heads being unchanged; machine bolts, both smaller and shorter, and larger and longer sizes, 10 per cent off list; hot pressed sq. and hex. blank nuts, 50c. off list; tapped nuts, list; cold pressed sq. and hex. blank nuts, list plus \$1; semi-finished hex. nuts, 40 per cent off list.

Warehouse Business.—Warehouse prices on steel bars have been reduced \$10 a ton to the Carnegie Steel Co.'s warehouse price by the leading local jobbing house. This jobber has also reduced warehouse prices on sheets to 7c. for black and to 6c. for blue annealed and has made reductions on hoops and bands.

Cleveland warehouses quote steel bars at 3.34c.; plates, 3.64c. and structural material, 3.44c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 7c. to 8c.; No. 28 galvanized, 9c. to 9.50c.; No. 10 blue annealed, 6c. to 6.50c.

Sheets.—The demand for sheets is very dull and prices continue to weaken. Quotations on the heavier gages rolled by light plate mills are particularly weak and some of the plate mills are now quoting the Steel Corporation's 3.55c. blue annealed base price on Nos. 10 and 12 gages. A new low independent mill price of 7.40c. is being quoted on galvanized sheets and one mill has quoted 7.25c. Black are quoted 5.50c. to 6c. and blue annealed 4.50c. to 5c.

Old Material.—With the limited consumption and absence of buying, prices have further declined. A number of steel plants and foundries have suspended shipments, but blast furnaces are still taking borings and turnings on contracts, and there is practically no activity except in these grades. There have also been quite a few cancellations of scrap. Heavy melting steel of best quality, consisting of selected railroad scrap, is being offered at \$22.50, and one mill that is not particular in its specifications is reported to have purchased this grade in small lots at \$20.

Dealers quote delivered consumers yards in Cleveland and vicinity, as follows:

Heavy melting steel.....	\$21.50 to \$22.00
Steel rails under 3 ft.....	25.00 to 26.00
Steel rails rerolling	26.00 to 27.00
Iron rails	26.00 to 27.00
Iron car axles	41.00 to 42.00
Low phos. melting scrap.....	25.00 to 26.00
Cast borings	14.50 to 16.00
Machine shop turnings	11.75 to 12.00
Mixed borings and short turnings.....	14.50 to 16.00
Short turnings for blast furnaces.....	14.50 to 16.00
Compressed steel	17.00 to 18.00
Railroad wrought	25.00 to 26.00
Railroad malleable	28.00 to 29.00
Steel axle turnings	16.00 to 17.00
Light bundled sheet stampings.....	11.00 to 12.00
Drop forge flashings over 10 in.....	15.00 to 15.50
Drop forge flashings under 10 in.....	15.00 to 15.50
No. 1 bushelings	16.00 to 16.50
Railroad grate bars	26.50 to 27.50
Stove plate	26.50 to 27.50
Cast iron wheels	27.00 to 27.50
Pipes and flues	16.00 to 17.00

Philadelphia

PHILADELPHIA, Nov. 16.

The view is generally held here that there will be no improvement in the demand for steel products until the Steel Corporation has announced its price policy for 1921. This announcement is expected within a few weeks. Few, if any, among the independents now cling to the hope that the Steel Corporation will advance prices, with the possible exception of rails. The impression prevails that the present schedule of prices, except on rails, will be reaffirmed for next year.

The effects of the slump in business upon furnace and mill operations are now becoming serious. Curtailment of operations has proceeded rapidly in the past two weeks, and it is apparent that, if lack of buying interest continues the steel industry of eastern Pennsylvania will be almost paralyzed in another 30 days. The Midvale Steel & Ordnance Co. on Monday blew out two of its three blast furnaces at Coatesville. Its plate mills and open-hearth furnaces there are idle and will not be started up until there is a pronounced revival in business. At Johnstown the Cambria Steel Co. is operating only six of its 11 blast furnaces and the finishing departments are averaging about 60 per cent. The Lukens Steel Co. is running nine open-hearth furnaces, less than 50 per cent, and its plate mills are idle. The Eastern Steel Co.'s blast furnaces are in blast, but the structural mills are virtually without operating schedules. Other steel companies in this district are in similar straits. The most optimistic do not look for any revival in demand for finished steel until after the first of the year. Some put off until spring the period when real buying activity may be expected.

There is almost complete stagnation in all lines of iron and steel, ferroalloys and old material. Such sales as are being made indicate a continued trend toward lower prices, this being particularly true with regard to pig iron and scrap. Not enough steel business is being offered to the mills to afford a real test as to what the independent producers might be willing to do. So far as plates are concerned, the shutting down of plate mills is equivalent to a declaration that they will not sell plates below 3c., Pittsburgh, based on present production costs.

Pig Iron.—The sale of 1000 tons of basic iron for prompt shipment at \$43, delivered, is the largest transaction of the past week. The market is extremely quiet as regards both sales and inquiries. In foundry iron, the situation is dominated by re-sellers, as the furnaces are taking little interest further than shipping the iron they still have on their books. Foundry iron has been sold at \$42 for No. 2 plain and \$43.25 for No. 2X furnace. A Virginia furnace has sold at least one lot on the basis of \$44, furnace. Low phosphorus, malleable and gray forge remain \$45, furnace. The Eastern basic iron market is, of course, affected largely by the prices quoted by furnaces in the Valley and Pittsburgh districts. Valley basic has been offered for shipment to the East at \$35, furnace, or \$41.16, delivered eastern Pennsylvania. Though requests for cancellations are coming more frequently, such requests are being generally denied, but suspensions have been granted in a considerable number of instances. As a result of these suspensions, some furnaces which recently figured they had several months' orders on their books will now be able to complete their scheduled shipment by the end of the year.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace.

East. Pa. No. 2 plain, 1.75 to 2.25 sil.....	\$43.54 to \$46.54
East. Pa. No. 2X, 2.25 to 2.75 sil.....	44.79 to 47.79
Virginia No. 2 plain, 1.75 to 2.25 sil.....	50.74 to 51.74
Virginia No. 2X, 2.25 to 2.75 sil.....	51.99 to 52.99
Basic deliv. Eastern Pa.....	41.16 to 43.00
Gray forge	46.16 to 46.54
Standard low phos. (f.o.b. furnace).....	60.00
Malleable	51.50 to 52.40
Copper bearing low phos. (f.o.b. furnace)	57.00

Coke.—A number of Eastern furnaces have not contracted for next year's coke. Furnace coke has been

offered within the past week on contract at \$8, Connells-ville. Foundry coke is held at \$1 or \$1.50 higher.

Ferroalloys.—While producers of ferromanganese and spiegeleisen quote \$170, seaboard, and \$75, furnace, on these products, there are no sales at these prices. The market is very quiet. An occasional carload of ferromanganese is sold at prices ranging from \$140 to \$150, seaboard.

Semi-Finished Steel.—Open-hearth steel billets are now obtainable from an Eastern mill at \$50, Pittsburgh, the freight rate to Philadelphia being \$5.74. Forging billets are quoted at \$60 to \$65, Pittsburgh. There is virtually no business.

Rails.—One or two independent rail mills have named \$57 as their price on open-hearth rails for 1921; another has made sales at \$62.50. It is the general expectation in the trade that when the Steel Corporation names a new price it will be at least \$5 a ton higher than its present price. Light rails are in fairly good demand. A Western Pennsylvania producer has sold light rails from stock in the past month in good-sized lots at 3.50c. and 3.75c., Pittsburgh.

Plates.—The curtailment in plate mill operation in eastern Pennsylvania is now pronounced. While lack of orders of course has necessitated several shut-downs, the companies first determined that they would not attempt to obtain orders at less than 3c., Pittsburgh, claiming that there is little, if any, profit even at 3c. The Midvale and Lukens plate mills at Coatesville are idle, and other plate mills are either running part time or are on the verge of shutting down. There are reports of sales of plates at 2.85c., Pittsburgh, and even as low as 2.75c., by mills in other districts, but sellers here have no direct information as to these sales other than what they learn from their customers. Nominally the plate market, so far as this district is concerned, is quotable at 3c., Pittsburgh.

Structural Material.—Reports are heard of building projects being revived. Prospective builders are ready to go ahead when conditions turn a little more in their favor. Structural mills have little to do, but fabricators have a fair amount of work ahead of them. Some of the Eastern mills are shut down or on the verge of doing so. The price for plain material remains nominally at 3c., Pittsburgh, from independent mills.

Bars.—The bar iron market is easier and material can be had at prices ranging from 4c. to 4.50c., Pittsburgh, depending on sizes and delivery. There is little demand. Occasional sales of small lots of steel bars are being made at 3c., Pittsburgh.

Sheets.—An Eastern maker of blue annealed sheets is quoting 5c., Pittsburgh base, but is taking very little business.

Boiler Tubes.—The Midvale Steel & Ordnance Co. has reduced its prices on steel and charcoal iron boiler tubes about \$10 a ton. New discounts are as follows:

Steel tubes, carload lots, 1½ and 1¾ in., plus 2 per cent; 2 in., minus 3 per cent; 2½ and 2¾ in., minus 8 per cent; 3 and 3½ in., minus 16 per cent; 3½ and 4 in., minus 25 per cent. Charcoal iron tubes, 1½ and 1¾ in., plus 20 per cent; 2 and 2½ in., plus 10 per cent; 2½ and 2¾ in., plus 1 per cent; 3 and 3½ in., minus 1½ per cent; 3½ and 4 in., minus 8 per cent.

Old Material.—The largest sale of steel scrap in this market in some weeks took place Tuesday, when 1500 tons of plate croppings in storage at the Hog Island shipyard were awarded to the Luria Bros. Co. at \$19, f.o.b. cars, Hog Island. The next biggest bid was \$1.50 under this price. An Eastern steel company has bought 400 tons of heavy steel scrap at \$18, delivered. Otherwise, the market is extremely quiet. The shutting down of steel plants in the East has reacted very quickly on scrap prices, which are considerably below those quoted last week, the reductions ranging from 50c. to \$4 a ton. It should be understood that the prices quoted below do not represent actual sales to consumers, but are based largely on transactions between dealers and brokers, which constitute the only

activity at present. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$19.00 to \$20.00
Steel rails, rerolling.....	30.00 to 32.00
No. 1 low phos., heavy 0.04 and under.....	30.00 to 31.00
Car wheels.....	38.00 to 39.00
No. 1 railroad wrought.....	24.50 to 25.00
No. 1 yard wrought.....	21.50 to 22.50
No. 1 forge fire.....	14.50 to 15.00
Bundled skeleton.....	15.00 to 16.00
No. 1 busheling.....	18.00 to 20.00
No. 2 busheling.....	16.00 to 18.00
Turnings (short shoveling grade for blast furnace use).....	15.00 to 15.50
Mixed borings and turnings (for blast furnace use).....	15.00 to 15.50
Machine-shop turnings (for rolling mill and steel works use).....	15.50 to 16.50
Heavy axle turnings (or equivalent).....	19.00 to 20.00
Cast borings (for rolling mills).....	20.00 to 21.00
Cast borings (for chemical plants).....	(no market)
No. 1 cast.....	34.00 to 35.00
Railroad grate bars.....	25.00 to 26.00
Stove plate (for steel plant use).....	24.00 to 25.00
Railroad malleable.....	27.00 to 28.00
Wrought iron and soft steel pipes and tubes (new specifications).....	19.00 to 20.00
Iron car axles.....	35.00 to 37.00
Steel car axles.....	35.00 to 37.00

GERMAN MARK TO FLUCTUATE

Buying of Raw Materials Offsets Exports—Export to United States Territories Large

NEW YORK, Nov. 16.—According to an exporter who recently returned from a trip through England, France and Germany, prospects are that the mark exchange will fluctuate from about 1c. to 3c. for some time. At present with the mark quoted at about 1.25c., German manufacturers are able to sell successfully into foreign markets at unusually low prices. When the balance of trade improves and the mark reaches a value of about 3c., the manufacturers satisfy their need for raw materials by importing heavily, which forces down the exchange on the mark. At prevailing exchange Germany cannot afford to buy abroad and is forced to satisfy her needs as best she can with domestic raw materials, but with the mark at about 3c., American or Belgian quotations would be lower and better deliveries would be an added incentive.

South American buyers continue to display caution in buying and some cancellations have been received on orders booked at Steel Corporation prices. Cuba shows more inclination to buy than most markets. An exporter in New York recently booked an order for 800 tons of corrugated bars at a good price. The depression in trade is causing reductions in personnel by many export houses. The Dutch East Indies continues to show moderate activity.

Exports to the Hawaiian Islands for the first eight months of 1920 total \$48,000,000 against \$32,000,000 for the same period last year. Iron and steel exports amounted to \$8,000,000 and passenger and commercial automobiles \$2,250,000. The Philippines, during the first eight months of this year, purchased about \$8,000,000 worth of iron and steel and \$2,250,000 worth of automobiles, while Alaskan buying of iron and steel totaled about \$7,000,000 of which \$1,600,000 was tin plate for the canning industry.

Raymond H. Howe of the Mellon Institute, Pittsburgh, was the principal speaker at the regular monthly meeting of the Pittsburgh Foundrymen's Association at the Hotel Chatham Monday evening. His subject was "Causes for Refractory Failures."

The Willys-Overland Co., Toledo, Ohio, announces that it will resume operations this week with 2000 employees in its parts department. This company's plant was entirely shut down about 10 days ago.

The Buick Motor Car Co., Flint, Mich., has reduced production from 540 cars daily to 350 and will operate on a 6-hr.-day basis. This was done rather than discharge a part of the employees and operate on a full time basis.

British Iron and Steel Market

Steel Prices Weakening—Blast Furnaces Resuming Slowly—Continental Competition Keen

(By Cable)

LONDON, ENGLAND, Nov. 15.

Blast furnaces are gradually resuming, but business is still partially suspended. Prices for Cleveland pig iron are unchanged, but a revision is expected shortly. Export business is not yet being entertained. Hematite iron is scarce and makers are fully booked; export inquiry is light. Quotations for East Coast mixed numbers are unaltered. Prices for steel are weakening, though as yet no general reductions have been made. The business that is moving is small, owing to the financial stringency.

In overseas markets Continental competition is keen and on the increase. German soft billets have been offered at £12, f.o.b.

The tin plate market is quiet and easy, with producers endeavoring to hold for a minimum price of 45s. basis for early delivery next year, but merchants have sold at 40s. and are talking lower prices. Some Welsh makers are closing their mills owing to unremunerative prices. A large line of oil plates has been placed with the East at 40s. basis, delivery January-February. Steel bars are unchanged, but obtainable at £18, delivered, from outside works. The galvanized sheet market is dull.

We quote per gross ton except when otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.37 for £1, as follows:

Ship plates	£26	0 to	£33	0	\$87.62 to	\$111.21
Boiler plates	30	0 to	35	0	101.10 to	117.85
Tees	26	10 to	31	0	87.62 to	104.47
Channels	25	15 to	30	5	86.68 to	101.94
Beams	25	10 to	30	0	85.84 to	101.10
Round bars, ¾ to 3 in. .	28	0 to	33	0	94.36 to	111.21
Rails, 60 lb. and up. . .	25	0 to	27	0	84.15 to	90.99
Billets	17	0 to	20	0	57.29 to	67.40
Sheet and tin plate bars						
Welsh	18	0 to	21	0	60.66 to	70.77
Galvanized sheets, 24 g. .	35	0 to	36	0	117.85 to	121.22
Black sheets, 24 g. to 26 g.	50	0 to	54	0	167.50 to	180.98
Tin plate base box. . . .	2	1½*			7.01	
Steel hoops	34	0			114.58	
Cleveland basic iron. . .	11	15			39.60	
West Coast hematite. . .	15	15			52.98	
Cleveland No. 3 foundry. .	11	5			37.91	
Perronmanganese	35	0 to	40	0	117.85 to	134.80
Coke	3	2½			10.61	

*Prompt delivery; forward, 41s. (\$6.93).

Coal Strike and Its Effects—Offerings of German and Belgian Pig Iron

LONDON, ENGLAND, Nov. 1.—After a fortnight's idleness in the coal mines, and a fortnight's abnormal activity among the men's leaders, a basis of settlement has now been arrived at. The strike is therefore regarded as over, and there is a general feeling of relief in consequence. The original offer of the Government to make output the basis of an advance in wages was of course rejected. The proposal was that accordingly as output increased over a certain line so would the wages rise. This gave birth to the expression, "datum line." It is doubtful if all the miners understood what datum line meant when they recorded their votes. At all events they erred on the safe side and voted against it. The new terms which are the basis of the agreement are that the 2s. advance is granted immediately, but this to be revised on Jan. 3. If it is found that the output as gaged by the proceeds of export coal has not sufficiently increased to justify the advance in wages then it will be automatically revised. As a basis for this calculation proceeds of export coal are the deciding factor. No doubt the men will go back to work confident in the feeling that the 2s. is a permanent fixture and no doubt they will be right. On one point the Government scored a victory and that was on the question of a reduction in the price of coal to the domestic consumer. This formed part of the original demand of the men, but was resolutely opposed, and was ultimately withdrawn.

A significant feature latterly has been the tendency toward moderation and compromise of the miners' leader, Mr. Smillie, who recently stated in a speech to the congress delegates that the just claims of labor would never be fully met until they had captured the House of Commons. This was regarded as significant because it indicated that the miners' leader was taking his stand on constitutional methods, and it appears to be a blow to the direct action section of the extremists of the labor party generally. Some of the extremists among the miners still oppose the settlement on the grounds that the 2s. should have been granted unconditionally, but the general expectation is that work will be resumed in about a week.

The effect of the strike, however, will not be quite so easily disposed of. Many works have had to stop and others go on short time. As a result the number of people who have been discharged up to Oct. 28 through the closing down of works was 84,215 and through reduction of staffs 129,123 while the number placed on short time was 328,068. One of the first industries to feel the effects of the strike was the iron and steel trade and it would appear that it will also feel the effect longest. Out of the 71 furnaces which were in blast throughout the North East Coast when the strike commenced all but 15 were soon inoperative. Of these fifteen, eight were on Cleveland iron, five on hematite, and two on special iron, and all were on slack blast, and were not expected to be able to continue beyond this last week end. Consequently dealings in foundry iron have been out of the question, makers having only forge, mottled and white to dispose of, for which there is no demand at present either for home or export.

It is to be expected that on a resumption of industry the works consuming iron will get into operation sooner than producers, so that the scarcity of foundry iron seems likely to be even more pronounced than before. For the manufactured iron and steel trade the strike really happened at an unfortunate time, in so far as there were signs of some revival in export inquiry and, as there has been an increase in the offers of German and Belgian material recently, it was all the more important that works here should be in a position to meet this competition. Meanwhile works here are quoting for delivery after the strike, and there is a distinct inclination on the part of manufacturers to make concessions.

The Sheffield Steel Products Co. held a meeting a few days ago for the purpose of adopting new articles of association, and of increasing the present capital of £2,000,000 to £4,000,000.

It is now reported that Messrs. Harland & Wolff, the Belfast shipbuilders, who also have yards on the Clyde and repairing works at Liverpool and Southampton, have made a contract with the Port of London authorities to take over the whole of their engineering repairs and constructional work, and to construct buildings of a permanent character of not less value than £300,000 and two slip ways for repairing and shipbuilding purposes.

More Open Top Cars Released

WASHINGTON, Nov. 16.—Under an amendment to the open-top coal car order the Interstate Commerce Commission has released thousands of additional cars for the use of the steel and other industries in need of this class of equipment.

The amendment to the order eliminates from the scope of Service Order No. 20 the territory West of the Mississippi River and East of the Rocky Mountains. Under the order as it now stands open-top cars with sides 42 in. in height and over can be used only for coal in the territory East of the Mississippi. The original order applied only East of the Mississippi, but it was extended to the Rocky Mountains a few weeks ago, when the coal situation seemed to warrant it.

In amending the order, the commission also gave carriers East of the Mississippi permission to use all flat-bottom gondola cars for loading of commodities generally as well as coal.

REDUCED FORCES

Many Men Idle in Cleveland—Some Readjustments of Wages

Further reductions in working forces have been made in Cleveland plants during the past week and it is estimated that the number of men now laid off in metal-working industries aggregates from 50,000 to 60,000. This includes employees in all branches of the metal working industry and also pattern makers and wood workers in automobile body shops. As the number of employees in these industries before the curtailment is estimated at 160,000 to 175,000, the average reduction of working forces is approximately one-third. A large share of the men laid off have left the city, many going back to their former homes in small towns around the farms.

Two or three of the largest Cleveland automobile companies are now operating at 15 per cent of capacity and others are not doing as well, while some of the smaller ones are virtually shut down.

During the last week or two production has been curtailed in plants making small tools. Manufacturers of these tools did not feel the effect of the slump in business as soon as those engaged in other lines of manufacture, but orders for twist drills, cutters and reamers have fallen off recently.

Wage readjustments are being made in a few plants, but with one exception there has been no flat cut in wages. One company making automobile ignition systems has made a flat cut of 20 per cent. New piece rates are being worked out in many plants. These reductions in piece rates are for the most part being made on rates established during war time when labor was exceedingly scarce and men who have been employed on these rates have been earning abnormally high wages. When men are taken back on these lines of work, they will have to accept the lower piece rates. It is also expected that there will be considerable readjustment in hour rates when men now laid off are taken back.

Operations in Cleveland foundries have been further reduced this month and the average operation of iron foundries is now 50 per cent. Brass foundries are also operating at about the same capacity. Some of the light gray iron foundries are running fairly well on old orders that were not canceled. However, automobile foundries are doing little. One of the largest is shut down and two others are operating at very limited capacity. There has been some readjustment of molders' wages in gray iron and brass foundries, particularly the latter. Some of these had been paying 10c. to 15c. premium upon the minimum hour rate, but have gone back to the minimum rate of 90c. an hour. The wage agreement between the foundries and molders expires Jan. 1 and it is very probable that employers will insist on a lower rate after that date. One Cleveland foundry had an opportunity to take a large contract for castings that would necessitate a 15 per cent cut in wages. The question was submitted to the molders, as the foundry could not reduce the rate of pay because of the wage agreement, and the men decided to remain out of work rather than accept the cut.

Molders Withdraw Demands

More than 2500 union molders of Boston and vicinity, recently presented demands to employers for \$1 per hour, an increase of 10c. per hour, but following the conference voted to continue the wage and working agreement under which they are now working for six months.

Publication of *Natural Gas*, the official organ of the Natural Gas Association of America, was instituted with the October number. The purpose stated is to help the association and thereby the natural gas industry and its patrons. W. Redfern Brown is editor, with office in the Ohio Field Supply Co. Building, Columbus, Ohio.

British Steel Exports Again Decline in September

The decline in British steel exports which started in August has continued. In September, this year, excluding iron ore and including scrap, they were 256,280 gross tons, which compare with 276,083 gross tons in August, with 393,016 tons in July, and with 262,676 tons per month in the first quarter and 298,287 tons per month in the second quarter. The exports and imports thus far this year are shown by the following table in gross tons:

	Exports	Imports
January	261,248	79,024
February	231,065	71,997
March	295,716	72,491
April	274,337	71,161
May	332,869	83,431
June	287,655	131,476
July	393,016	142,428
August	276,083	92,628
September	256,280	173,838

The September export figures are 19,803 tons less than the August outgo, and 136,736 tons less than the July. In fact, the September total is the smallest thus far this year, except in February. The total exports for the first nine months have been 2,591,442 tons, or 287,938 tons per month, as compared with 1,620,817 tons to Oct. 1, 1919. The September imports are the largest for the year. The imports to Oct. 1, 1920, have been 991,981 tons as against 400,625 tons to Oct. 1, 1919.

The following summary gives the relative exports and imports of the first quarter and first half, and for July, August and September, 1919 and 1920, as well as the average per month for 1913 and 1919 in gross tons:

	Exports	Imports
Average first quarter, 1919.....	147,228	44,713
July, 1919	192,466	48,099
August, 1919	212,365	41,958
September	191,964	76,438
Average first half, 1919.....	170,139	37,483
Average first quarter, 1920.....	262,676	74,504
July, 1920	393,016	142,428
August, 1920	276,083	92,628
September 1920	256,280	173,838
Average first nine months, 1920.....	287,938	110,220
Average per month, 1913.....	420,757	195,264
Average per month, 1919.....	204,516	61,557

The trend of some of the principal exports is shown by the following data in gross tons:

	Av. Per Month	Av. Per Month	Sept. 1919	Sept. 1920
Pig iron	78,771	21,503	21,670	29,659
Steel rails	41,676	10,435	5,610	13,969
Steel plates	11,162	19,996	14,636	15,757
Steel bars	20,921	20,787	19,752	28,401
Galvanized sheets	63,506	15,508	22,304	29,101
Tin plates	41,208	24,147	25,442	20,543
Black sheets	5,679	11,109	6,196	1,893

The principal export gains in September, 1920, over September, 1919, and the 1919 monthly average have been in pig iron, steel rails, steel bars and galvanized sheets. In all the above items the falling off in September as compared with July this year was pronounced, especially in pig iron, rails, galvanized sheets, tin plates, tubes and fittings and cast iron pipe.

Pig iron imports in September were 9646 tons against 16,668 tons in September, 1919. The average per month in 1919 was 13,623 tons, and in 1913 it was 18,059 tons per month.

Iron ore imports in September this year were 487,211 tons, bringing the total to Oct. 1 to 5,195,390, as compared with 4,124,625 tons to Oct. 1, 1919.

Manganese ore imports in September, 1920, were 50,934 tons. These compare with 11,263 tons in September, 1919, and with 50,098 tons per month in all of 1913. The total for the first nine months of this year has been 327,097 tons against 232,268 tons to Oct. 1, 1919. The average per month in 1919 was 22,150 tons.

The Kentucky Iron & Steel Co., Louisville, recently organized, will take over the local plant of the Louisville Steel & Iron Co., devoted to the production of bar iron and other specialties. Operations will be continued on the same basis as heretofore, and it is understood that no extensions are contemplated at this time. R. Wilbur Tietjen is president.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin New York	Lead		Zinc	
	Lake	Electro- lytic		New York	St. Louis	New York	St. Louis
Nov.							
10	15.00	15.00	37.25	6.70	6.40	7.25	6.70
11	15.00	15.00	37.50	6.65	6.40	7.10	6.60
12	14.75	14.75	37.25	6.62½	6.40	7.00	6.50
13	14.75	14.75	6.62½	6.40	6.90	6.40
14	14.75	14.75	36.00	6.62½	6.40	6.80	6.35
15	14.75	14.75	37.00	6.50	6.37½	6.80	6.35

NEW YORK, Nov. 16.

All the markets continue to decline, some more than others, in the general movement of industrial liquidation. There is practically no improvement in the demand for copper and quotations are a little lower. Tin has declined quite decidedly, partly in sympathy with marked recessions in London. The lead market is fast being transformed from a sellers' to a buyers' market and prices are lower with little demand. Zinc has gone to lower levels, due largely to the weak position of some small producers. Antimony has also declined.

New York

Copper.—Both Lake and electrolytic copper are quoted and have sold at 14.75c., New York, for this year's delivery, with 15c. asked for the first quarter. There has been a moderate amount of buying but it is by no means significant, although sales to foreign countries continue to maintain their recent volume. Production is being curtailed by many producers, but what weakness there is in the general position is due to the desire as well as the necessity of some interests to convert into cash at least a portion of their stocks.

Tin.—The market has been exceedingly quiet again and has gone to still lower levels. In the last week there has been only one day on which any business of importance was transacted and that was on Nov. 10 when there was fairly active trading in spot and nearby metal, or tin ex-steamer at the dock, the price being realized averaging around 37.25c., New York. On the New York Metal Exchange there have been sales of around 150 tons for various positions at prices ranging from 38.50c. to 38.75c., mostly first quarter shipment, though one sale involved 25 tons of spot under the rule, located at Pittsburgh, which went at 37.37½c. Consumers still remain out of the market and there is no activity on the part of dealers which, together with the decline in London, which has been quite marked, has caused the market here to fall until spot Straits was quoted yesterday at 36c. and to-day at 37c., New York. In London to-day spot standard tin was quoted at £238 10s. as contrasted with £245 15s. a week ago; future standard at £240 12½s. as contrasted with £251 15s., and spot Straits at £242 10s. as contrasted with £248. Arrivals thus far this month have been 1405 tons, with 3675 tons afloat.

Lead.—The feature of this market is that it is more of a buyers' market now than it has been in a long time. Supplies are increasing and there are more sellers, some of whom are anxious for orders. Nevertheless, there is very little business and the market is dull and stale. Present conditions are due largely to a decided falling off in consumption, production not having improved to any extent. In fact consumption is now estimated at less than production. Late last night the leading interest reduced its price ½c. per lb. to 6.50c., both St. Louis and New York. The New York quotation is fixed on the same basis as St. Louis because of the import situation, which is stated to be still a factor, owing to the decline of the metal in London. Previous to to-day's quotation the outside market was quoted at 6.40c., St. Louis, and 6.62½c., New York. The outside market is now 6.50c., New York, or 6.37½c., St. Louis.

Zinc.—Because of the fact that some sellers, either

from anxiety or necessity, are desirous of disposing of at least some of their stocks, there have been sufficient offerings to depress the market until to-day prime Western can be bought at 6.35c., St. Louis, or around 6.80c., New York. Some sales have been made at around these levels, but the policy of most of the large producers is to meet these low prices only when absolutely necessary and only for early delivery. There is spasmodic buying of limited amounts for immediate needs by galvanizers and other consumers, but otherwise the market is extremely quiet. There has been a drastic curtailment in output by several large companies, including Anaconda and Butte-Superior.

Antimony.—Dullness pervades the market with wholesale lots for early delivery quoted at 6c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is inactive with wholesale lots for early delivery quoted at 32.90c. f.o.b. producer's plant, while the same grade from other sellers is quoted at 28c. to 29c., New York.

Old Metals.—This has been an unsettled week. The market has lost the enthusiasm of last week and prices have reacted slightly. Dealers' selling prices are nominal as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	15.00
Copper, heavy and wire.....	14.00
Copper, light and bottoms.....	12.50
Brass, heavy.....	10.25
Brass, light.....	7.50
Heavy machine composition.....	14.75
No. 1 yellow rod brass turnings.....	7.00
No. 1 red brass or composition turnings.....	12.00
Lead, heavy.....	6.00
Lead, tea.....	5.00
Zinc.....	4.50

Chicago

Nov. 16.—The market is exceedingly quiet and what little business is being transacted is principally in resale material. All of the metals with the exception of antimony have suffered further declines. The old metals are dormant. We quote Lake copper at 15.50c. in carload lots; tin, 40c.; lead, 6.50c.; spelter, 6.50c.; antimony, 8c. to 8.50c. On old metal we quote copper wires, crucible shapes, 10.50c.; copper clips, 10.50c.; copper bottoms, 9c.; red brass, 10.50c.; yellow brass, 7c.; lead pipe, 5c.; zinc, 4c.; pewter, No. 1, 20c.; tin-foil, 25c.; block tin, 30c.; all these being buying prices for less than carload lots.

St. Louis

Nov. 15.—The non-ferrous markets have been softer during the week with quotations on car lots at the close as follows: Lead, 6.60c., with some sellers asking as high as 7c.; spelter, 6.55c. to 6.80c. In less than car lots the quotations were: Lead, 7c.; spelter, 7.25c.; tin, 42c.; copper, 16c.; antimony, 8.50c. In the Joplin district ore prices were about as last quoted, the producers showing little disposition as yet to recede with the metal market, while the cold weather helped to restrict production. On miscellaneous scrap metals we quote dealers' prices, buying, as follows: Light brass, 5c.; heavy yellow brass, 7c.; light copper, 9c.; heavy red brass, 10c.; heavy copper and copper wire, 10c.; zinc, 4c.; lead, 6c.; pewter, 24c.; tin-foil, 30c.; tea lead, 3c.; aluminum, 15c.

Decreased Steel Capacity

YOUNGSTOWN, OHIO, Nov. 16.—The Republic Iron & Steel Co. has suspended its entire open-hearth capacity of 14 furnaces and Trumbull Steel Co. has likewise curtailed steel making capacity.

Thirty-one of 46 blast furnaces in the Mahoning and Shenango Valleys are active, 12 being out of blast and three suspended. Average daily iron output is 15,000 tons.

The Carnegie Steel Co. has placed No. 6 furnace in blast, giving it five active out of six in Ohio Works, No. 2 being idle for repairs.

The Woodward Iron Co. has blown out one stack at Vanderbilt, Ala., making three idle.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	\$0.35	St. Paul	0.695
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.78
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.33	Pacific Coast, ship	
Indianapolis	0.345	plates	1.335
Chicago	0.38	Birmingham	0.765
St. Louis	0.475	Jacksonville, all rail	0.555
Kansas City	0.815	Jacksonville, rail and	
Kansas City (pipe)	0.78	water	0.46
		New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, 3/4 in. thick and over, and zees, structural sizes, 2.45c. to 3c.

Wire Products

Wire nails, \$3.25 to \$4.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 to \$2 and shorter than 1 in., \$2 to \$2.50. Bright basic wire, \$3.25 to \$4 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25 as quoted by the American Steel & Wire Co., and No. 8 and heavier, \$4 to \$4.25, the range of independent makers; galvanized wire, \$3.95 to \$4.70; galvanized barbed wire and fence staples, \$4.10 to \$5.20; painted barbed wire, \$3.40 to \$4.60; polished fence staples, \$3.40 to \$4.50; cement-coated nails, per count keg, \$2.85 to \$4.10; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 55 to 58 per cent off list for carload lots, 54 to 57 per cent for 1000-rod lots, and 53 to 56 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....\$4.75 to \$5.00 base
Large boiler rivets.....4.85 to 5.10 base
Small rivets......45 to 40 per cent off list
Small machine bolts, rolled threads
40 and 5 to 40, 10 and 5 per cent off list
Same sizes in cut threads.....40 and 5 per cent off list
Longer and larger sizes of machine bolts
30 and 10 per cent off list

Carriage bolts, 3/4-in. x 6-in.:

Smaller and shorter, rolled threads
Cut threads.....30 and 10 to 20 per cent off list
Longer and larger sizes.....30 to 20 per cent off list
Lag bolts......30 per cent off list
Flow bolts Nos. 1, 2 and 3 head.....45 to 40 per cent off list
Other style heads......35 per cent off list
Machine bolts, c.p.c. and t. nuts 3/4-in. x 4-in.:

Smaller and shorter.....30 to 10 per cent off list
Longer and larger sizes.....20 to 10 per cent off list
Hot pressed sq. or hex. blank nuts.....\$1.50 to 50c. off list
Tapped nuts......1.00 off list
C. p. c. & t. sq. or hex. nuts, blank.....list plus \$1.00
C. p. c. & t. sq. or hex. nuts, tapped.....list plus \$1.00
Semi-finished hex. nuts, U. S. S. and S. A. E.:

3/4-in. and larger.....50 and 10 to 40 per cent off list
9/16-in. and smaller.....50 and 10 to 40 per cent off list
Stove bolts in packages......70 per cent off list
Stove bolts in bulk......70 and 2 1/2 per cent off list
Tire bolts......50 per cent off list
Track bolts......7c. base

Square and hex. head cap screws:
Rolled threads......60 and 5 to 50 per cent off list
Cut threads......55 and 10 to 50 per cent off list
Set screws......50 and 10 to 50 per cent off list
One cent per lb. extra for less than 200 kegs. Rivets in
100-lb. kegs 25c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57 to \$70; chain rods, \$57 to \$70; screw stock rods, \$62 to \$75; rivet and bolt rods and other rods of that character, \$57 to \$70; high carbon rods, \$80 to \$95, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$4 to \$4.25 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, 1/2-in., 3/4-in. and 7/16-in., \$4.40 to \$5; 5/16-in., \$5 to \$5.75; track bolts, \$7. Boat and barge spikes, \$4.40 to \$5 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$4 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coat-

ing, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. to 3.25c. from mill. Common bar iron, 4.15c. to 4.50c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Butt Weld			Iron		
Inches.	Black	Galv.	Inches	Black	Galv.	Inches	Black	Galv.
1 1/2, 1 3/4 and 2	47 to 50 1/2	20 1/2 to 24	3 1/2	15 1/2 to 25 1/2	+1 1/2 to 1 1/2	1 1/2	19 1/2 to 29 1/2	1 1/2 to 1 1/2
2 1/2	51 to 54 1/2	36 1/2 to 40	4 1/2	19 1/2 to 29 1/2	1 1/2 to 1 1/2	2 1/2	24 1/2 to 34 1/2	8 to 15 1/2
3 1/2 to 3	54 to 57 1/2	41 1/2 to 44	5 1/2	24 1/2 to 34 1/2	8 to 15 1/2			

Lap Weld			Lap Weld		
2	47 to 50 1/2	34 1/2 to 38	2	20 1/2 to 28 1/2	6 1/2 to 14 1/2
2 1/2 to 6	50 to 53 1/2	37 1/2 to 41	2 1/2 to 6	22 1/2 to 30 1/2	9 1/2 to 17 1/2
7 to 12	47 to 50 1/2	33 1/2 to 37	7 to 12	19 1/2 to 27 1/2	6 1/2 to 14 1/2
13 and 14	37 1/2 to 41				
15	35 to 38 1/2				

Butt Weld, extra strong, plain ends

1 1/2, 1 3/4 and 2	43 to 46 1/2	25 1/2 to 29	3 1/2	+17	+50
2 1/2	48 to 51 1/2	35 1/2 to 39	4 1/2	13 1/2 to 23 1/2	6 1/2 to +3 1/2
3 1/2 to 1 1/2	52 to 55 1/2	39 1/2 to 43	5 1/2	18 1/2 to 28 1/2	9 1/2 to 15 1/2
2 to 3	53 to 56 1/2	40 1/2 to 44	6 1/2 to 1 1/2	24 1/2 to 34 1/2	9 1/2 to 19 1/2

Lap Weld, extra strong, plain ends

2	45 to 48 1/2	33 1/2 to 37	2	21 1/2 to 29 1/2	8 1/2 to 16 1/2
2 1/2 to 4	48 to 51 1/2	36 1/2 to 40	2 1/2 to 4	23 1/2 to 31 1/2	11 1/2 to 19 1/2
4 1/2 to 6	47 to 50 1/2	35 1/2 to 39	4 1/2 to 6	22 1/2 to 30 1/2	10 1/2 to 18 1/2
7 to 8	43 to 46 1/2	29 1/2 to 33	7 to 8	14 1/2 to 22 1/2	2 1/2 to 10 1/2
9 to 12	38 to 41 1/2	24 1/2 to 28	9 to 12	9 1/2 to 17 1/2	5 1/2 to +2 1/2

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1 1/2 to 1 1/2 in.	+7 to -19 1/2	1 1/2 to 1 1/2 in.	+23
2 in.	+2 to -19 1/2	1 1/2 to 1 1/2 in.	+20
2 1/2 to 2 1/2 in.	+3 to 30 1/2	2 in.	+10 to 15
2 1/2 to 3 1/2 in.	+11 to 30 1/2	2 1/2 in.	+10 to 12
3 1/2 to 4 1/2 in.	+20 to 40 1/2	2 1/2 in.	+1 to 10
		2 1/2 to 3 1/2 in.	-1 1/2 to +3
		3 1/2 to 4 1/2 in.	-8 to list

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton		Per Net Ton	
1 in.	\$327	1 1/2 in.	\$207
1 1/2 in.	267	2 to 2 1/2 in.	177
1 1/2 in.	257	2 1/2 and 3 1/2 in.	167
1 1/2 in.	207	4 in.	187
		4 1/2 to 5 in.	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For prompt delivery, independent mills are getting up to the prices quoted in the right-hand column:

Blue Annealed		Cents per lb.	
Nos. 8 and heavier	3.45 to 4.95		
Nos. 9 and 10 (base)	3.55 to 5.00		
Nos. 11 and 12	3.60 to 5.05		
Nos. 13 and 14	3.65 to 5.10		
Nos. 15 and 16	3.75 to 5.20		
Box Annealed, One Pass Cold Rolled		Cents per lb.	
Nos. 17 and 21	4.15 to 6.05		
Nos. 22 to 24	4.20 to 6.10		
Nos. 25 and 26	4.25 to 6.15		
No. 27	4.30 to 6.20		
No. 28 (base)	4.35 to 6.25		
No. 29	4.45 to 6.35		
No. 30	4.55 to 6.45		

Galvanized Black Sheet Gage		Cents per lb.	
Nos. 10 and 11	4.70 to 7.00		
Nos. 12 to 14	4.80 to 7.10		
Nos. 15 and 16	4.95 to 7.25		
Nos. 17 to 21	5.10 to 7.40		
Nos. 22 to 24	5.25 to 7.55		
Nos. 25 and 26	5.40 to 7.70		
No. 27	5.55 to 7.85		
No. 28 (base)	5.70 to 8.00		
No. 29	5.95 to 8.25		
No. 30	6.20 to 8.50		

Tin-Mill Black Plate		Cents per lb.	
Nos. 15 and 16	4.15 to 6.30		
Nos. 17 to 21	4.20 to 6.35		
Nos. 22 to 24	4.25 to 6.40		
Nos. 25 to 27	4.30 to 6.45		
No. 28 (base)	4.35 to 6.50		
No. 29	4.40 to 6.55		
No. 30	4.40 to 6.55		
Nos. 30 1/2 and 31	4.45 to 6.60		

Carnegie Steel Co. Works Schools with Technical Courses

New System of Training for Mill Employees Covers Two Years—Schools Already Started at Homestead, Duquesne and Edgar Thomson Works Have Several Hundred Applicants

BY the institution last September of what are known as works schools, the Carnegie Steel Co. has enlarged again the field of its educational work. Through these schools the company aims to extend the advantages of a course of technical instruction in all phases of the manufacture of steel to all its workmen not technically educated. The course covers two years, and beginning with a brief preparatory period devoted, if necessary, to a study of the essential laws of physics and chemistry, it covers all the metallurgical processes used by the company. The time devoted to the preparatory period is varied to suit the education of the students on entering the course. One of the objects in starting these schools was to bring within easy reach of deserving and ambitious employees, who through force of circumstances have not been able to attend college, some of the advantages of a college education combined with a practical knowledge of the metallurgy of iron and steel. It was decided, therefore, to put the instruction work in the hands of a teacher with college experience, who could then be assisted by the superintendents and technical men in the mills. For this position Prof. John L. Acheson, formerly of the staff of the University of Pittsburgh, was selected.

The School a Plant Institution

A central school being impracticable, each plant has its own school, the management of which comes under the jurisdiction of the plant superintendent. The superintendent appoints a committee, composed of department heads and technically educated employees, to co-operate with the instructor, advertise the school among the employees, receive applications, and select the students for the various classes. Each plant has a lecture room, which is furnished and equipped according to the wishes of the instructor and the requirements of the course. No tuition is charged, nor are the students required to spend any money for supplies, except for a special text book, which is supplied at the cost of printing. Any other books the student may wish to buy are also supplied at cost. For all time spent in attending the lectures and recitations the men are allowed full pay. Few pre-requisites beyond a common school education are required for the course. The company is endeavoring thus to remove as many restrictions as possible, and to present impartially to all its employees an opportunity to learn the reasons for the practices of the mills.

While the schools are separate units as to the details of their management, they are also bound together as a unit in aims and ultimate results. This union is brought about by having but one supervising instructor, and by union meetings of the various committees. These meetings give opportunity for contact with the officials of the company, who may meet with the committeemen and discuss matters of policy pertaining to the general conduct of the schools. At such meetings the personal representative of the president is the head of the Bureau of Technical Instruction, established by the company several years ago—James M. Camp.

Three Schools Now Established

Until the details of the plan has been more fully worked out and its success assured, it was not considered good policy to start these schools in all the plants of the company at once. Up to the present time, therefore, these schools are in operation only at the three larger plants of the company in the Pittsburgh district, namely, the Homestead, Edgar Thomson and Duquesne works. At each of these plants the men taking the course are assembled twice a week, in

classes of 20 each, for a period of instruction of not less than one hour. It was originally planned to have a new class of 20 men admitted every six months, so that by the end of 18 months each plant could have four classes taking the courses, or 80 men in all. This plan has been strictly adhered to at the Homestead and Edgar Thomson plants, but for experiment and other special reasons, at Duquesne all applicants were admitted at once, and these were sub-divided into three classes of about 20 each. The recitation and lecture periods occur between the hours of 8 a.m. and 6 p.m. The exact time of meeting for each class at the different plants is arranged to come at a period between the hours mentioned that is most convenient for the men and will cripple the mills the least. The supervising instructor visits these plants successively, going to Homestead on Mondays and Thursdays, to Duquesne on Tuesdays and Fridays, and to Edgar Thomson on Wednesdays and Saturdays. An assistant instructor has already been appointed for the Duquesne school, but at Homestead and Edgar Thomson Professor Acheson is as yet able to give all the instruction in person.

While it is yet a little too early to judge, the success of these schools seems assured. The co-operation of the plant superintendents and their committees has been most gratifying, while the men taking the course are enthusiastic and loud in their praises. The great interest shown by all the employees is manifest from the number of applications received for the first classes, which began Sept. 6. At the Homestead works 250 men applied for admission to these classes, at the Edgar Thomson, 150, while at Duquesne 70 men were enrolled, and applications at all three plants are still coming in.

Besides the establishment of these works schools, which aim at the higher education of its employees, this company has also expanded in its other educational activities, some of which it has carried on for several years. These include the apprentice schools, in which young men are taught the various trades offering employment in the mills; the night schools, in which foreigners are taught English and the requirements for good citizenship, and others are offered courses in mathematics, mechanical drawing and the sciences; and the school for salesmen, in which the company's salesmen are given a brief but thorough course in the metallurgy of iron and steel. This last school has been in operation for the last ten years and has become a permanent institution with the company. A new feature introduced into the salesmen's school about three years ago is known as the "return" course for salesmen. This was instituted in order to give the salesman an opportunity to refresh his memory on things learned in the first course, and to become acquainted with improvements and changes in practice and products at the mills. The course covers four weeks only, but is an intensive one that requires rather strenuous effort on the part of the salesmen.

General specifications for electric traveling cranes is the subject of a paper which will be delivered before the Pittsburgh section of the Association of Iron and Steel Electrical Engineers on Saturday evening, Nov. 20, at the Hotel Chatham, Pittsburgh. The presentation will be made by Walter Greenwood, chairman of the safety committee for 1920, through which the organization has accepted the responsibility of formulating specifications for the national safety code committee of the American Engineering Standards Committee.

PERSONAL

F. B. Hufnagel, for the past 20 years connected with the operating department of Jones & Laughlin Steel Co., Pittsburgh, the past eight years as general superintendent of its Aliquippa works, Woodlawn, Pa., has resigned to accept the position of president of the Pittsburgh Crucible Steel Co., a subsidiary of the Crucible Steel Co. of America. He succeeds John W. Dougherty. T. M. Girdler, who has been assistant general superintendent of the Aliquippa works of Jones & Laughlin Steel Co., has been named to succeed F. B. Hufnagel as general superintendent.

Emmett B. Carter, plant engineer of the Nicetown plant of the Midvale Steel & Ordnance Co., has been temporarily detached and assigned to duty in the mechanical department at the Cambria Steel Co., Johnstown, Pa., where extensive alterations and improvements are being made.

H. A. Brassert, chairman Freyn, Brassert & Co., engineers, Chicago, has returned from a three months' business trip to England, Holland, France, Belgium and Germany.

D. W. Dunn has been appointed branch manager at the Philadelphia office at 917 Arch Street of Fairbanks, Morse & Co., which recently bought out the business of the Luster Machinery Co., that address.

W. H. DeWolfe, formerly of Philadelphia, has recently been appointed district manager of the New Britain Machine Co., New Britain, Conn., with headquarters at Room 638, Old South Building, 294 Washington Street, Boston.

L. C. Wilson, for the past two years general sales manager of the Chain Belt Co., Milwaukee, has been elected secretary of the Federal Malleable Co., West Allis, Wis., manufacturer of malleable castings, malleable chain and the Rapid molding machine. He assumed his new duties on Nov. 15 and will be succeeded as sales manager by Clifford F. Messinger. Mr. Wilson is a Yale graduate and began his business career as a salesman with Harbison-Walker Refractories Co., Pittsburgh. In 1917 he became associated with the Chain Belt Co., and until his appointment as sales manager acted in the capacity of assistant to the vice-president. The Federal Malleable Co. is closely associated with the Chain Belt Co. Mr. Messinger is also a Yale graduate and has been with the Chain Belt Co. since 1909 in various capacities, including that of advertising manager, manager of Rex concrete mixer sales and assistant to the vice-president.

F. E. Searle, superintendent of Ford Training Schools, Ford Motor Co., Detroit, delivered an address entitled "Some Training Methods at the Ford Plant" before the fall convention of the Society of Industrial Engineers at Pittsburgh last week.

C. B. Warner has been made general sales manager and chief engineer of the Nelson Motor Truck Co., Saginaw, Mich. A. W. Campbell will be his assistant.

Homer Williams, president Carnegie Steel Co., has been elected a trustee of the University of Pittsburgh, to serve until 1923. For a number of years he served as a trustee of the Carnegie Institute of Technology and of the Carnegie Library.

C. S. Williamson, manager Western office, Mead-Morrison Mfg. Co., will address the Chicago section of the Association of Iron and Steel Electrical Engineers on Nov. 19 on "Ore and Coal Handling Equipment."

Frederick H. Payne, president Greenfield Tap & Die Corporation, Greenfield, Mass., spoke before the members of the Nayasset Club, Springfield, Mass., on the evening of Nov. 12.

E. E. Allyne, president Aluminum Manufactures, Inc., formerly the Aluminum Castings Co., has resigned because of poor health and to spend the winter in the

South. W. P. King, formerly vice-president, has been elected to succeed Mr. Allyne, and will also be treasurer. George J. Stanley, vice-president, has become vice-president in charge of production, and John H. Watson, Jr., has been re-elected secretary.

W. S. Quigley, president Quigley Furnace Specialties Co., New York, has just returned from Europe after an extensive trip made in connection with large installations of the Quigley powdered coal system in Italy and Belgium.

Edward J. Toomey, formerly assistant general manager of the Michigan Pattern & Machine Works, has been made vice-president of the Bloomfield-Rodger-Toomey Co., accounting engineer, Detroit.

Frederick Best, secretary Thomas Firth & Sons, Ltd., Sheffield, Eng., manufacturers of steel forgings and castings and high speed tool steel, has arrived in New York for a sojourn of a few weeks in the interest of his firm.

A. C. Alden, formerly in the purchasing department of the U. S. Cartridge Co., Lowell, Mass., has become associated with the Grover File Co., Nashua, N. H., machinery and supplies.

Eugene W. Pargny, president American Sheet & Tin Plate Co., has been elected a member of the board of directors of the Southside Trust Co., Pittsburgh.

J. C. Sellers, Jr., Aluminum Manufactures, Inc., Cleveland, has been appointed Southeastern representative for Lynite products, with local headquarters at Merion Station, Pa. In this territory he will handle the sand casting business of the Buffalo and Fairfield plants, in addition to the forging and permanent mold business of the Cleveland plant.

Charles E. Hildreth, former president Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass., and president Worcester Chamber of Commerce, has been made receiver of the Standard Plunger Elevator Co., that city.

Theodore Dengler, manager of the Mohawk and Wolverine mines at Lake Linden, Mich., has been appointed manager of the Michigan Copper Mining Co.

W. H. Oliver, Jr., captain Ordnance Department, United States Army, is returning to civil life due to an injury received on duty, but from which he is now recovered. He will not return to his former activities as president-treasurer of the Guyan Machine Shops, Logan, W. Va., held prior to being commissioned in the Army during the war, although he retains his stock interests. His address is 1402 River Avenue, San Antonio, Tex.

Paul E. Thomas, president and general manager Kempsmith Mfg. Co., Milwaukee, milling machines, has returned from a three months' business and recreation tour of Europe.

W. W. Garrett, engineer of tests Tennessee Coal, Iron & Railroad Co., Birmingham, is scheduled to address the Birmingham section of the Association of Iron and Steel Electrical Engineers on Saturday, Nov. 27, on "Auxiliary Motor Control."

Robert L. Lake has resigned the presidency of the Steamship & Shipyard Equipment Corporation, New York and Baltimore. He will take up activities in other fields.

Richard C. Lea, manager of the Milwaukee branch of the Crucible Steel Co. of America, with headquarters at 110-114 Clybourn Street, has been appointed manager of the Los Angeles branch, effective Dec. 1.

A. H. Ackerman, 427 Reaper Block, Chicago, has been appointed district sales representative of the Tacony Steel Co., Philadelphia, succeeding F. B. Hillwick. The Tacony offices have been removed from Marquette Building to 427 Reaper Block, Chicago.

Gustaf Petersen, recently appointed general sales manager of the Electric Alloy Steel Co., Youngstown, Ohio, has had an experience of 21 years in the steel industry and collateral lines in this country and abroad. He was born in Orsa, Sweden. After graduating in 1899 as a mechanical engineer, he served three years with

the Bofors Gun Mfg. Co., Bofors, Sweden, in the open-hearth, Bessemer and rolling mill departments. He came to the United States in 1903 and for three years was employed by the Pennsylvania Railroad at its Altoona shops as designer and subsequently in laboratory work in charge of physical tests. Between 1911 and 1916 Mr. Petersen was a special representative on alloy steels for the Carnegie Steel Co. He resigned from the Carnegie company to become vice-president and general works manager of the Alloy Steel Spring & Axle Co., Jackson, Mich., which position he resigned to join the Electric Alloy Steel Co.'s organization.

Nils Anderson, president the Debevoise-Anderson Co., New York, has returned from an extended trip to Great Britain and the Continent. Mr. Anderson says that some countries of the old world are suffering from the after effects of too much prosperity fully as much as other countries are suffering from long continued depression.

H. H. Johnson, a prominent Cleveland attorney, has been elected director and chairman of the board of the White Motor Co., Cleveland, filling the position held for several years by his late law partner, M. B. Johnson, who died recently.

G. F. Eldridge, B. Nicoll & Co., New York, has returned from a short sojourn in England.

OBITUARY

THOMAS E. THOMAS, aged 59, well known manufacturer of the Mahoning Valley, died Nov. 10 at his home in Niles, Ohio, following an illness of four months from heart trouble. Mr. Thomas was president of the Niles Fire Brick Co., director and vice-president of the Mahoning Valley Steel Co., vice-president of the Thomas Furnace Co., Milwaukee, treasurer of the Jenifer Iron Co., Alabama, and a director of the Niles Car & Mfg. Co. He was a son of John R. Thomas, who built the first blast furnace at Niles and was associated with his father in his earlier life.

ARTHUR H. WAITT, who during the war organized one of the largest purchasing branches of the Ordnance Department at New York and Hartford, died Nov. 10 in Sharon, Conn., after an illness of a few weeks. He was superintendent of motive power and rolling stock of the New York Central for 25 years. He was a member of the American Society of Mechanical Engineers, and the Engineers' Club of New York.

JAMES W. BELL, vice-president Wagner Electric Mfg. Co., St. Louis, and one of the pioneer capitalists of the electrical industry, died at his home in St. Louis, Nov. 4, at the age of 94.

LIQUIDATING STOCKS

Readjustment Well Under Way at Youngstown —Pipe in Strongest Position

YOUNGSTOWN, OHIO, Nov. 16.—Current inflow of new business is reported at somewhat below 50 per cent to producers with a good range of finishing capacity. Amended orders of the Interstate Commerce Commission with respect to use of coal cars for steel shipments have made large numbers available for the industry. Accumulated sheet tonnage is of negligible proportions, while heavy inroads are being made into the overhang of other finished products which recently aggregated 82,800 tons, as compared with 58,680 tons a month before. The fuel market has apparently settled for the time being at \$4.50 for steam coal, at the mine, and \$5.50 to \$6.50 for gas coal, depending upon the grade. Coke has receded to \$8.50, while some contracts have been entered into for delivery during the remainder of the year on a sliding scale basis, the price averaging \$7.75. The sharp recessions in fuel costs are enabling makers to produce iron at a lower figure and have been reflected in recent negotiations. While resale activities continue to play an important part in the market, sale from producers' stocks was recently made at \$36. Sharp cuts in production may develop a shortage that will revive demand and stimulate prices, it is believed in some quarters. All companies are liquidating materials. One district fabricating interest, for instance, is buying only against pressing requirements, though its stocks of raw material are less than they have been in five years and its orders are plentiful. This company is determined not to find itself with a heavy inventory of high-priced material. A steel company which is not self-contained in pig iron recently stopped specifications against a running contract in order to work off all stock on hand, both of iron and of bars and billets.

Salesmen Are Active

Sales departments of all makers are active and are eager to take on new business. In nearly all commodities, except perhaps pipe, the buyers are controlling the market. Pipe, wire products and tinplate are in the strongest positions. Unfilled tonnage of pipe makers is heavy and business on the books will engage capacity well into next year. Makers of iron skelp report

continued activity. In the face of a laggard sheet market, producers with interchangeable mills which may also work tin plate are devoting more and more capacity to such production. Tin plate consumption is well maintained, with the independent price still around \$8, though it is the expectation in the trade that new contracts will be based on a lower quotation. The leading interest has not yet opened its books to 1921 business.

Little Demand for Sheets

In the absence of demand except for small tonnages, there is little activity in the sheet market, though rumors of good-sized orders to make their appearance within a month are current. Sales departments are devoting attention to tracing these reports. Black, one-pass sheets are quotable from 6c. to 6.25c. base, with full finished at a 1.50c. differential. The galvanized range is from 7c. to 7.50c., though one interest continues to quote 8c. A number of inquiries ranging up to 500 tons for galvanized for construction purposes circulated through the district last week. In the face of limited inquiry, blue annealed is quotable at 4.50c. Competition from the lighter gages of plates is still an influence in the sheet market. Very good deliveries may be obtained on all grades of sheets.

Cold-Rolled Material

Manufacturers of steel products by cold processes report an active inquiry. A leading cold steel interest whose principal plant is located at Youngstown announces it is operating at capacity, with heavy future commitments.

Some plate tonnage moved during the past week at 2.95c., with the nominal quotation at 3c. Sales down to 2.85c. are authentically reported. While there is a somewhat less insistent demand for wire and wire products, makers believe there is still a heavy overhanging demand. Strip steel buying is being done in limited quantities.

In the semi-finished market, specifications against sheet bar contracts are light and prices are indefinite. It is expected a good-sized tonnage of sheet bars would attract makers at a figure under \$60.

Dealers in scrap metals have been adversely affected by the conditions in the steel industry and little business is reported. Heavy melting sales of recent date are reported from \$22.50 to \$23.

LOWER WAGES CERTAIN

Leading Youngstown Company Will Issue Frank Statement to Employees

YOUNGSTOWN, OHIO, Nov. 16.—Pointing out the economic factors behind the current readjustment in the steel industry, the executive of a leading independent has prepared a statement to be issued to employees declaring that a reduction in wages is inevitable. Workers are therefore advised to conserve their earnings. The statement points out that the industry faces a period of more or less irregular operation and consequently intermittent employment. Employees are advised that every effort will be exerted to provide work for all, but that the slack in buying will force curtailments and likely some suspensions.

With operations having declined to an average of 60 per cent in the district, there has been a sharp increase in idleness during the past week. Some of the smaller plants have adopted the expedient of laying off single men first. The number of idle men in the district has been increased by an influx from Akron, Toledo, Baltimore and Detroit.

Prevailing wage for laborers is \$5.06 per day, or at the rate of 46½c. an hour. Some contractors are paying as high as 60 to 65c.

Major independents are maintaining schedules at a better rate than the newer companies. In announcing that the company will maintain its current rate of production for some time, A. N. Flora, vice-president of the Trumbull Steel Co., states that there is an encouraging volume of inquiries, while business in hand is sufficient to keep the plant operating at a normal rate. Brier Hill Steel Co. is on a 50 per cent basis. Sharon Steel Hoop Co. is one of the heaviest sufferers in the present emergency and is operating only three of nine sheet mills. Republic Iron & Steel Co. has largely curtailed operation of its open-hearth department, but is maintaining a rate close to normal in its Bessemer and Brown-Bonnell works.

Shipments going forward from the Mahoning Valley are estimated at not more than 50 per cent of the rated capacity of finishing mills. Blast furnace operation is at the rate of 60 per cent of capacity, 15 of the 25 stacks in the Valley being active and nine either wholly down or banked. The Niles furnace of the Carnegie Steel Co. has been idle ever since the spring following the signing of the armistice, while several other furnaces have been blown out for relining. Furnace interests are evidently unwilling to stock iron at this time. Steel ingot capacity of the Valley is being maintained at about 65 per cent of normal.

Taylor Society's Annual Meeting

An extensive program has been arranged by the Taylor Society for its annual meeting which will take place Dec. 2, 3, and 4 in the Engineering Societies Building, New York. Of the six sessions that on "The Long Day in the Steel Industry" already noted in these columns and to be held Friday evening, Dec. 3, jointly with the metropolitan and management sections of the American Society of Mechanical Engineers and the New York section of the American Institute of Electrical Engineers, stands out as worthy of special mention. Horace B. Drury, formerly department economist, Ohio University, will speak on "The Three-Shift System in the Steel Industry," and William B. Dickson, vice-president Midvale Steel & Ordnance Co., is scheduled to speak on "The Point of View of the Manufacturer." Fred J. Miller, president of the American Society of Mechanical Engineers, will preside at this meeting, and Robert B. Wolf, consulting engineer, New York, will lead the discussion.

"Scientific Management in the Sales Department" will be the subject of the Friday forenoon session at which Henry S. Dennison, president the Taylor Society, will preside. Reports of committees on a questionnaire sent out, on the organization and functions of the sales engineering department and on the organization and

functions of the sales operating department, will be delivered at this session.

The subject for discussion at the Saturday forenoon and afternoon sessions will be "Standardization of Products." John R. Dunlap, the Engineering Magazine Co., will preside at the forenoon meeting, and H. S. Person, managing director of the Taylor Society, at the afternoon session. The speakers at the morning session will be: Melvin T. Copeland, Harvard University, formerly in active charge of conservation division of war industries board, on "Standardization of Products as a National Economy"; Alfred L. Smith, director music industries Chamber of Commerce, and Willard E. Freeland, sales engineer Winchester Repeating Arms Co., on "Standardization of Products as a Plant Economy." The subjects at the Saturday afternoon meeting will be as follows:

"The Point of View of the Manufacturer" by Paul T. Cherington, secretary National Association of Wool Manufacturers, Boston; "The Point of View of the Merchandiser" by Howard Coonley, president Walworth Mfg. Co., Boston; "The Point of View of the Industrial Engineer" by Morris L. Cooke, consulting engineer in management, Philadelphia; "The Point of View of Organized Labor" by William H. Johnson, president International Association of Machinists, American Federation of Labor, Washington; "The Point of View of the Consumer" by Edwin F. Gay, president New York Evening Post Co., New York, formerly dean of the Harvard Graduate School of Business Administration. Mr. Gay will also speak on Saturday evening, Dec. 4, on "Risk as a Retarding Factor in Production."

TRADE CHANGES

At a meeting of the stockholders of Hubbard & Harris, Inc., consulting engineers, Bridgeport, Conn., it was voted to change the firm's name to Hubbard, Harris & Rowell, Inc. The officers of the concern are Harry E. Harris, president and treasurer, Ralph K. Rowell, vice-president and H. B. Harris, secretary. It will be conducted as a personal service corporation and Ralph K. Rowell, who recently left the position of equipment engineer with the International Motor Corporation to affiliate with Hubbard & Harris, Inc., will handle a large portion of their increased activities in designing special equipment and grinding machines.

The General Machine & Supply Co., Philadelphia, has changed its name to General Grinding Wheel Corporation because the company wishes to feature the grinding wheel business.

L. A. Snow, Seattle, former head of the Koehring Machine Works, agency representatives of a number of Eastern equipment houses, has succeeded the company, which will in future operate under the name of L. A. Snow Co. It will handle lines of Koehring concrete mixers and pavers, Sterling motor trucks, C. H. & E. pumps, saws, mortar mixers, and will represent the Metal Forms Corporation, manufacturer of metal forms.

The Washington Engineering Sales Co., Seattle, recently incorporated by R. J. Church, H. D. Fowler and E. I. Flateboe, have made trade connections with the following firms: The Northern Engineering Works, Detroit; Overmire Steel Construction, steel fabricator; and the Puget Sound Iron & Steel Works, manufacturer of logging engines, gray iron and steel castings, and general machine parts. The firm is located in the L. C. Smith Building.

C. C. Bradford has changed the name of the selling organization which he has recently formed from the Manufacturer's Sales Co., to the Bradford Sales Co. The offices of this company, which will represent not more than two manufacturers as a district sales office of each, are located at 340 Leader-News Building, Cleveland.

Sentiment Opposes Price Reductions

(Continued from page 1324)

their so-called contracts were unenforceable against them; that if they cancelled their orders no one could do anything very much about it.

"Gentlemen who had proudly proclaimed a high moral standard of American business, became suddenly conscious of the existence of an old and forgotten record of a bygone age, that relic of a medieval statute enacted in the period of the reign of Charles II in England, which begins this way—

"And be it further enacted by the authority aforesaid, that from and after the said four and twentieth day of June, A.D. 1677, no contract for the sale of any goods, wares and merchandise, for the price of ten pounds sterling, or upwards, shall be allowed to be good, except the buyer shall accept part of the goods so sold, and actually receive the same, or give something in earnest to bind the bargain, or any part payment, or that some note or memorandum in writing of the said bargain be made and signed by the parties to be charged by the contract, or by their agents, thereunto lawfully authorized."

"Gentlemen, this is the famous statute to prevent frauds and perjuries; and that statute in a modified form is part of the law of every leading commercial state of America at the present time.

The Uniform Sales Act

"The main differences between the statutes in the leading commercial states are these: That in New York, and in a great number of the other states, one uniform sales act has been adopted. The dividing line between an enforceable and an unenforceable contract for the sale of goods, wares and merchandise, is \$50. In some others that same loss is as high as \$2500. In Massachusetts, I believe, the figure is set at \$500; and I submit to you, men, that \$50, which is taken from the old English statute of frauds, being ten pounds, translated into dollars, is not equivalent to what it was in 1677.

"In my opinion, that figure is altogether too low in this state, or the other states where \$50 has been set.

"It seems to me that the Commissioners on Uniform State Laws might well take up that question, and make the dividing line uniform throughout the State, and set the figure at a reasonable price.

"Every lawyer knows the expression of blank amazement that comes over the faces of some of his clients, confronted by a cancellation of a contract for the purchase of merchandise; when the lawyer asks his client for the original contract on sale, how often is the answer, 'Contract—we don't make any contracts. We just sell our goods.' There is often nothing in writing signed by the party; no note or memorandum of the transaction, absolutely nothing, except in some cases an order form furnished by the seller, and signed sometimes by the seller's own salesman.

"I will wager that a very large percentage of the gentlemen here present to-day represent houses which make their contracts in that way; and having so made them, such contracts are unenforceable by action; and even delivery of merchandise, pursuant to such an agreement, gentlemen, does not prevent the buyer from refusing to accept it and turning it back on the seller.

"To meet this trouble of returned goods, sellers have often adopted the plan of printing on their invoices such words as these: 'All claims for defective goods must be made within ten days of their receipt.'

"My own office is representing at the present time a buyer who purchased certain goods from a manufacturer's agent in the City of New York. The order was given last December, and the goods were shipped on Dec. 7. The order was taken by the seller's agent in Boston, and it was taken orally. The goods when received were not taken from their original wrappings until the following July, when they were opened and inspected and found defective. Seven months, mind you, had elapsed since the time of the sale.

"Printed on the billhead and on a memorandum of the order, which was mailed on the date of shipment, were the words: 'No claims allowed unless made within ten days of the receipt of these goods.'

"Gentlemen, no such stipulation had entered into the agreement of purchase and sale. It was volunteered by the seller, after the contract had been made; and let me say this—that such statements on billheads and on memoranda of orders are absolutely worthless. They are simply breeders of litigation and nothing more.

"In a case where this question arose, decided by the Supreme Court of New Jersey within the last few years, the Court said: 'It is apparent that no one of these notices, of itself, constituted a contract with respect to the work to which the bill on which it was printed was applicable. When the first bill was sent to the plaintiff, the notice on it was a nullity; so with the second; and so with each of the bills of series, as these bills came in from time to time. While the plaintiff knew the notice was upon them, it must be assumed that he also knew that the notice was in law a nullity, and had no legal effect.'

Laxness of Business Men

"Gentlemen, there is a surprising and dismaying laxness on the part of business men in this simple matter of the making of a contract for the sale of goods, wares and merchandise; and this laxness is the more deplorable because the Uniform Sales Act, which has been adopted in so many states, is readily accessible to you all, and its language is so clear and unequivocal. It is a statute intended to simplify and make uniform the law of sales; but the business man who even knows of the existence of that statute I find is exceptional.

"The sales act has been adopted in more than twenty American states and in England, in substantially the same form, and I submit that it is a business man's statute, and that it would pay him to have a copy of the Uniform Sales Act in his office library.

"Let us assume, however, that a contract of sale is in writing and is otherwise enforceable and binding, and yet the buyer refuses to take the goods; what can you do? Well, the sales act answers that. If the goods are readily resalable at a reasonable price, you can resell them and charge the original buyer with the loss. If they are not readily resalable, or if the title to the goods has passed to the buyer, you can notify the buyer that you hold the goods as bailee for him, and you can sue him for the price; but note this—and I find it a fact of which many manufacturers are entirely ignorant—if a cancellation comes while the goods are in process of manufacture, or before work has been commenced, the seller must do nothing further toward the completion of the goods, if to do so will increase the amount of damages for which the buyer would be held liable.

"In a word, if you thereafter continue to expend labor or expense, you do so of your own account, and the buyer need not pay for it.

"You cannot prevent cancellations. The most the law will do for you is to give you a cause for action; sometimes for the price, and always for damages.

"The law gives you an opportunity to recoup your loss; and it is for you to decide whether you will avail yourselves of that opportunity or not.

"Bear in mind this, that in the last analysis, cancellation of orders is a means of liquidation. It is not always reprehensible. It is sometimes better that a buyer cancel his order rather than accept goods he cannot pay for, for then he has your goods and the money; while, if he had cancelled the order, you would at least have the goods.

Necessity for Enforceable Contracts

"There is no greater service that a credit man can perform for his house than to see that contracts of sale are made so that they will be legally enforceable; and this should be done before he passes upon the credit risk. He should remember that the value of a cause of action for breach of contract, in the last analysis, depends upon the ability of the debtor to pay a judgment, when you get a judgment against him; and the enforceability of contracts depends altogether not solely upon the law of sales. There are other statutes that are only second in importance, which it is the

business of somebody in your organization to take into account.

"There is, for example, the question of the right of a corporation to do business in a state other than that of its origin. Most states require foreign corporations, as a condition of doing business therein, to be licensed, and to pay a license tax. The usual penalty is that imposed by the Law of New York State, that unlicensed foreign corporations may not sue in the courts of this State.

"The limitations imposed by the statute are limitations upon the privilege of protecting intrastate business only. Interstate business under our constitution is under the sole jurisdiction of the Federal Government. It cannot be interfered with by the states; but it is often a nice question as to what is interstate business and what is intrastate business; and the courts themselves frequently go wrong upon this question.

"A large manufacturer of type-setting machines recently sold a machine to a newspaper in Arkansas. The machine was shipped from New Orleans, consigned to the seller, notified to the buyer. The sales agent set the machine in place upon its arrival, and demonstrated it to the satisfaction of the buyer. The buyer failed to pay; and when sued, set up as a defence that the seller was a foreign corporation, doing business in the State of Arkansas, and that it had no license to transact business in that State.

"The case went to the Supreme Court of Arkansas, where the learned justices, citing the famous 'lightning rod' decision of the United States Supreme Court, held that the transaction was one in intrastate commerce, and assigned as their reason for the decision, that title to the machine had passed in the State of Arkansas.

"Such a decision, I have no hesitation in saying, is bad law. It is not surpassed by the cases which were cited by the Supreme Court of Arkansas, and it is not in accordance with the decisions handed down by the United States Supreme Court.

"But, right or wrong, that decision establishes what is to be the law of Arkansas; and the manufacturer of this linotype machine received not one red cent in payment.

"Michigan, again, has developed an extreme position on this question; and where property sold by a foreign corporation which agrees to erect or set in place the article sold, the contract is held to be one in intrastate commerce, unless the seller can show that there are no mechanics in the State of Michigan, capable of doing the work of installation or erection.

"The most extraordinary piece of modern legislation which I have ever seen is a statute which becomes law in Virginia on Jan. 2, 1921.

"It provides, in part, that where any seller shall furnish an order form to any buyer in the State of Virginia, and that form is printed in type smaller than pica, the contract so made and so taken shall be unenforceable.

"I have no hesitation in characterizing that statute as unwise and improper. It is the most extreme instance I have ever seen of legislative interference with the minutiae of business detail.

"It imposes upon all persons, firms or corporations doing business in the State of Virginia the necessity of printing their contracts in type of a certain size and description, under penalty of having the contract declared unenforceable. And, let me remind you, gentlemen, that it is presumed that everyone knows the law, and 'ignorance of the law excuses no one.'

"I have said that you cannot prevent cancellations, but there are a few very definite things that you can do to minimize their number.

Make Contracts Legally Enforceable

"In the first place, you can make it less easy to cancel, by making your contracts legally enforceable. Second, you can let it be known among your competitors that certain houses are given to cancelling orders. It is information that your credit man will know how to make use of. Third, you can insist more often upon your legal right to damages for breach of contract, until your customers learn that contracts

cannot be broken without cost; and, fourth, you can carry on a campaign, a moral campaign of education against reckless buying, and in favor of a higher standard of ethics, whereby men will be made to appreciate the obligation imposed by their given word.

"Gentlemen, it seems perhaps a little thing to stand here on this particular day to discuss the obligations of contract. But in a very true sense, gentlemen, that is the issue that took two million American men across the seas to France, three years ago. It was the issue that caused an outraged world to spring to arms, in defense of ravaged and bleeding Belgium.

"Thank God, as between man and man today, those questions are controversies to be settled before our courts of law; and as an American and as a lawyer, I hope the day will soon come when breaches of international obligations will be decided by a tribunal where right and justice will prevail.

"Gentlemen, that is the great issue for which the war was fought; and Armistice Day is the glorious anniversary of the vindication of the principle that contracts are not 'scraps of paper,' and they cannot be broken with impunity."

Blames Sales Forces for Cancellations

E. W. McCullough, manager of the fabricated production department, Chamber of Commerce of the United States, also discussed the subject of cancellations, explaining an investigation which the Chamber of Commerce of the United States had been conducting to determine the causes and remedies for unjust cancellations. He said that the matter had been brought to the attention of his organization by several trade associations, some of whose members complained that within a period of 30 days their plants had gone from full speed to a state virtually of being shut down. Digging into the situation, Mr. McCullough said the Chamber of Commerce found that manufacturers have been paving the way for this situation for years.

"Our sales forces contributed not a little," he said, "to the education that later reacted upon us, and brought about this unsatisfactory state of affairs.

"Salesmen were sent out, and the factory was loaded with production, with instructions to urge upon the buyer everything that he ought to have and a little more, with the assurance that he would be taken care of; but later, when we were called upon to take care of him, we were not quite so willing to do it.

"There was gross overloading in many lines, and with this was the contract situation, ease in making them, ease in executing them, with not a very strong regard for their execution, and it became really a habit to cancel in some lines. In fact, there was but little objection offered to cancellations in some lines.

"As Mr. Montgomery has stated, the matter of taking orders became very loose. You might say, however, that a contract is equal to passing a man's word; consequently, that element of it should not have deteriorated, but it did.

"But what prompted most of the cancellations, as we were able to find, was that prices were at very high peak; that goods were hard to get; that orders were pyramided; and when the suggestion came that prices were going lower, and perhaps going lower rapidly, everybody strove to get from under the load.

"Then we got into using that favorite American habit of 'passing the buck.' The retailer passed it to the wholesaler, the wholesaler to the manufacturer, and the manufacturer tried to pass it to the raw materials man; but that did not always work. I do not believe it would work in the machine-tool line, in dealing with the producers of pig iron and iron and steel.

"We have gone, I think, a little too far in this matter of insuring service. Service is a good thing within certain confines; but it gets to the point where our salesmen insure the buyer that we are going to take care of him, in this case, that we extend a sort of paternalism, which is very dangerous.

"Every division of trade should bear its own burdens, and when we endeavor to take those burdens from it and carry them for them, as a sort of special favor, as a relief to them from the business burdens that they should bear, we are on very dangerous

ground, and we discover it in such times as this.

"Mr. Montgomery has given you the legal advantages of a well-drawn contract. The United States Chamber of Commerce wants to endorse everything Mr. Montgomery said in regard to doing business in the right way. We feel also that every trade organization ought to study its particular line and reconstruct its trade ethics, and its method of doing business, so as to bring them in line with what is proper; but we do not believe any of those things are going to cure this evil of cancellations; it goes a little deeper than that.

"We feel that although a campaign for the moral side of it may seem weak and ineffective, that really is the only thing that will eventually work out the cure in this case.

"I recall very distinctly when the advertising men began their campaign for clean advertising. There were no agreements or understandings back of it, but just a campaign for clean advertising; and after approximately nine years, you could not offer to a leading journal an exaggerated advertisement, without having it sent back for revision of copy.

"We believe in this case if we can create the right slogan that will catch the country, that the square deal and the Golden Rule, and that sort of ethics can be so brought home to the business men of this country that a man's contract will be equal to his private word; that the repudiation of a contract will place a rating upon him as would the repeated breaking of his own word.

"I have been in the organization business some years; in fact, prior to the Anti-Trust Law, the Clayton Law, as Secretary of an organization I wrote up many of these so-called gentlemen's agreements.

"I am here to testify that in not one single case was one of those agreements ever fully kept.

"I think the men that made those agreements will average up with the gentlemen of the country everywhere. There was always something to interfere with the full keeping of a fast and binding agreement. Consequently, I feel that more stress should be laid on the moral side of it, the moral obligation.

"Every precaution should be taken, as suggested by Mr. Montgomery, to impress the sanctity of contract in our business relations with our customers, and with everybody, and with the people that we buy material of. When a man habitually evades his obligation, habitually cancels orders, he ought to be set aside as a marked man, and it ought to be discretionary as to whether we should do business with him or not.

"We hope in the course of the next few weeks to find that slogan that I have spoken of, to bring about an emphasis of this sanctity of contract—the regard for one's business word, equal to that one regards one's word in private."

Reawakening of Business Conscience Needed

In the discussion which followed it was pointed out that what is needed is a reawakening of the business conscience; that sellers of goods should adopt a firmer stand toward suggestions of cancellations; that firmer contracts should be entered into—contracts that cannot be broken with impunity, and it was further suggested that a campaign to educate the buyer to feel a larger responsibility when he places an order would have some good effect.

It was pointed out by one or two speakers that sellers of pig iron have succeeded in establishing a contract as uncancellable.

A number of questions was asked of Mr. Montgomery, questions having to do with the legality of various kinds of contracts or sales agreements, a result of which was the realization that many machine tool builders apparently are not informed fully as to the laws in various states. Carl E. Dietz of the Norton Co. made a motion that a committee be appointed to investigate the matter of state sales laws and report to the convention. This was carried.

On Friday morning the convention broke up into groups and discussed business conditions pertaining to the particular types of tools which they manufacture. In the afternoon a session for members only was held, concluded by the annual election of officers.

Resolutions of sympathy were adopted on account of the death of Daniel M. Wright of the Henry & Wright Mfg. Co., Hartford, Conn., who was a prominent member of the association. These resolutions will be sent to the family. It was decided that the spring meeting of the association shall be held at Atlantic City next May.

New Plant of Pomeroy Machine Co.

The Pomeroy Machine Co., Pomeroy, Ohio, has just completed its new plant on which operations were started July 24. The new foundry building contains 46,500 sq. ft., with 6400 sq. ft. for machine shop; a new pattern shop, 6300 sq. ft.; pattern storage at 6300 sq. ft., and blacksmith shop with 1500 sq. ft. The main building for foundry use is an Austin standard building to which is added a specially constructed building for housing the cupola and charging floors.

The designing and arrangement of these buildings are the work of A. V. Wadsworth, general manager of the company. By these arrangements pig iron and coke are delivered directly to the charging floors and at the same level by railroad. No elevators are necessary and the storage yard is provided at the proper level at that point. Melted iron is delivered directly to the center of the building (this point being less than 30 ft. from the cupola spout) by overhead cranes. It is there picked up by two 6-ton cranes traversing the entire length of the main building and by two 3-ton cranes on the side bays, also traversing the main building's entire length. By means of these same cranes castings are delivered to the cleaning rooms, which are located in the opposite end of the building from the cupola. With the exception of 80 ft. in length, no back travel is necessary from the melting point to the loading of finished castings.

Three 6-ton and two 3-ton cranes have been installed and 10 Osborn molding machines are in use. This plant is one of the best equipped gray iron foundries in the State. It is devoted almost exclusively to the production of oil well castings for the Parkersburg Rig & Reel Co., Parkersburg, W. Va. A production of 125 tons per day is expected.

Large Decrease in Steel Corporation's Orders

Unfilled orders on the books of the United States Steel Corporation, Oct. 31, were 9,836,852 tons, compared with 10,374,804 tons on Sept. 30. This is a decrease of 537,952 tons, against one of 430,234 tons on Sept. 30, and 313,430 tons in August, an increase of 139,651 tons in July, 38,352 tons in June, 580,718 tons in May, 467,672 tons in April, 389,994 tons in March, 216,640 tons in February and 1,020,075 tons in January. The unfilled tonnage a year ago was 6,472,668 tons, or 3,364,184 tons less. The table below gives the unfilled tonnage at the close of each month, beginning with January, 1917:

	1920	1919	1918	1917
Jan. 31	9,285,441	6,684,268	9,477,853	11,474,054
Feb. 28	9,502,081	6,010,787	9,288,443	11,576,697
March 31	9,892,075	5,430,572	9,056,404	11,711,644
April 30	10,359,747	4,800,685	8,741,882	12,183,083
May 31	10,940,465	4,282,310	8,327,623	11,886,591
June 30	10,978,817	4,892,855	8,918,866	11,383,287
July 31	11,118,468	5,578,661	8,883,801	11,844,164
Aug. 31	10,805,038	6,109,103	8,759,042	10,407,049
Sept. 30	10,374,804	6,284,638	8,297,905	9,833,477
Oct. 31	9,836,852	6,472,668	8,353,293	9,009,675
Nov. 30		7,128,330	8,124,663	8,897,106
Dec. 31		8,265,366	7,379,172	9,381,718

The largest total of unfilled orders was on April 30, 1917, when it was 12,183,083 tons. The lowest was on Dec. 31, 1910, at 2,605,747 tons.

The Central Iron & Steel Co., Harrisburg, Pa., is continuing to operate at full capacity, according to Robert H. Irons, president. There is nothing in sight to indicate any curtailment of operation of the plant, Mr. Irons says.

The Trumbull-Cliffs Furnace Co. has placed an order with Arthur G. McKee & Co., Cleveland, for a McKee revolving distributor for its new blast furnace at Warren, Ohio.

OPEN SHOP MOVEMENT

President Barr of National Founders Association Discusses Situation

Outstanding industrial labor conditions were given chief attention in his address this year before the National Founders' Association by President William H. Barr at the annual meeting in the Hotel Astor, New York, Nov. 17. Existing restrictions to the free admission of desirable immigrants were also discussed. The report was in part as follows:

A partial, but careful, survey of irresistible activities in behalf of the open shop shows that 540 organizations in 247 cities, of 44 states, are engaged in promoting this American principle in the employment relations. A total of 23 national industrial associations are included in these agencies. In addition, 1665 local Chambers of Commerce, following the splendid example of the U. S. Chamber of Commerce, are also pledged to the principle of the open shop.

Seventeen years ago the vital principles of the open shop were emphasized at the instance of one of the greatest men which America has produced; a man whose name is synonymous with patriotism—Theodore Roosevelt. During the anthracite strike of 1903, as you will recall, he appointed a commission composed of representative men to investigate the strike and to lay the foundation of a set of rules to govern the future relations of the employers and the workers. While the words may have been written by the commission, the spirit is that of Theodore Roosevelt. It says:

"That no person shall be refused employment, or in any way be discriminated against on account of membership or non-membership in any labor organization; and that there shall be no discrimination against or interference with any employee who is not a member of any labor organization by members of such organization.

Labor in Presidential Campaign

The Presidential campaign which has just closed was especially interesting to members of our association in one regard. For the first time the labor unions came out openly in an attempt to coerce our people into electing to public office only the approved representatives of the labor union. They sent more than 150,000 professional field men and leaders, paid for out of their approximately annual income of \$50,000,000, into all parts of the country, in one tremendous effort to deliver the union labor vote to the Democratic party in conformance with the resolution passed at the last annual convention of the American Federation of Labor. The failure to elect was complete and ignominious. We, in this Association, have known for many years that there could be delivered no such thing as a union labor vote, but men in public life have until now regarded it as a tangible possibility.

In the year 1919 there were 3232 strikes of record.

COLD ROLLED STRIP STEEL

Tolerances Conformed to by the Majority of Cold Rolled Strip Manufacturers

The accompanying table of tolerances is conformed to by the majority of the cold rolled strip steel manufacturers of the country and owing to the paucity of

An analysis of 2395 of these, or only about 60 per cent, show that 3,950,411 strikers lost an average of 34 days per strike, which meant a loss of 134,300,000 working days. That is only a part of the time wasted. Counting 134,000,000 working days lost at an average of \$6 a day, the money value is estimated in wages at more than \$800,000,000. What was the loss to industry? What was the loss and inconvenience to the people of the United States?

These strikes made possible the very thing which the workers were crying out against, the so-called profiteering. For profiteering in wages meant increased cost of production, and, in addition, strikes for the purpose of forcing uneconomic wages brought about decreased production.

Immigration Restrictions

There are approximately forty conditions which an intending immigrant must now meet before he enters the United States, and if he passes them all he represents a far higher grade of intelligence than one would be likely to find in the population of any community, American or foreign.

There are two provisions which are open to grave question: One is the literacy test, the other the so-called contract labor law. The literacy test is not honest because its real purpose is concealed, which is nothing more or less than to keep out unskilled labor which the country needs. It is not a test of industry, energy, character or loyalty, and these are the fundamental things.

The contract labor law does not prevent the importation of immigrants who would reduce our standards of living, and as it is worded, we are forbidden to give any immigrant correct information concerning opportunities of placement, so that when he comes here he cannot be routed to the districts where he is most needed. Proper distribution is exactly what we need to assist in the stabilization of normal industrial requirements.

Interracial Council

But there is at least one organization that has a definite immigration purpose, and a complete program. That is the Interracial Council, of New York. Its possibilities and accomplishments are limited only by the funds at its disposal. It carries a bureau of research for the special study of problems of immigration. It conducts a double system of education—one for the immigrant, so that he will learn about America, and that field with which he has the closest relation; that is, the field of employment. It provides reading matter for the press, because it believes that it is as important for the American to learn of the immigrant as it is for the immigrant to be educated concerning America. The council also makes surveys in industrial establishments employing foreign labor, the object being to acquaint the management with the thoughts and opinions of foreign-born workers by direct and open discussion with them.

information on the subject it will undoubtedly be of particular interest.

"Cast Iron for Locomotive Cylinder Parts" is the title of Technological Paper No. 172 of the U. S. Bureau of Standards. The author is C. H. Strand, associate physicist of the Bureau.

Commercial Tolerances in Fractions of Inch Covering Thickness of Cold Rolled Strip Steel

Commercial Standards in Fractions of Inches.										Width, In.				
Thickness, In.	1/2 to 2	2 to 3	3 to 4	4 to 6	6 to 8	8 to 10	10 to 12	12 to 14	14 to 18					
0.200 and heavier.....	0.003	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.007					
.100 to .199.....	.002	.003	.003	.004	.004	.005	.005	.005	.006					
.050 to .099.....	.002	.002	.002	.003	.003	.003	.004	.004	.005					
.035 to .049.....	.002	.002	.002	.002	.002	.003	.003	.003	.004					
.031 to .034.....	.0015	.002	.002	.002	.002	.003	.003	.003	.004					
.025 to .030.....	.0015	.0015	.002	.002	.002	.002	.003	.003						
.020 to .024.....	.0015	.0015	.002	.002	.002	.002	.003	.003						
.017 to .019.....	.001	.001	.0015	.0015	.002	.002	.002							
.015 and .016.....	.001	.001	.0015	.0015	.002	.002								
.013 and .014.....	.001	.001	.001	.0015	.0015	.0015								
.012.....	.001	.001	.001	.001	.0015	.0015								
.011.....	.001	.001	.001	.001	.0015	.0015								
.010.....	.001	.001	.001	.001	.0015	.0015								

Measurements to be taken 1/4 in. from extreme edge for strips not over 6 in. wide and 1/4 in. for strips wider than 6 in.

Machinery Markets and News of the Works

SLIGHT IMPROVEMENT

Inquiry for Machine Tools Shows More Life, But Orders Are Few

No Further Price Reductions—Some Reports That Present Quotations Will Be Maintained

A slightly better inquiry for machine tools is reported by some sellers, but the improvement is slight and has not extended to actual orders, which are still few and far between. In Chicago there has been a revival of railroad demand. The Santa Fe has bought three driving-wheel lathes and has issued a new inquiry representing an outlay of about \$200,000 for equipping a shop at Albuquerque, N. M. In other sections of the country there are no positive signs of any important railroad buying.

No further price reductions are reported; on the other hand, there have been a few advances. A line of surface grinders, universal grinders, cutter and tool grinders and drill grinders has been advanced 10 per cent. Two manufacturers of balancing machines have put up their prices 10 per cent.

It is reported in some quarters that a majority of

machine-tool manufacturers will maintain their present quotations, but the guarantee against decline is being freely used to protect buyers. In most instances the guarantee runs for six months, but in at least one instance a price was guaranteed for a year.

Sentiment at the meeting of the National Machine Tool Builders' Association last week, as expressed by individuals, was opposed to price reductions on machine tools at this time. Present manufacturing costs are the highest in the history of the industry, the situation being complicated by reduced operations at many plants, which increase the unit cost.

Not all of the machine-tool plants are without orders. Some of the Cincinnati plants, whose shipments were delayed by the recent machinists' strike, have orders on their books sufficient for three or four months' operation. Other plants are making tools for stock, but obviously will not continue doing so for long if there is no revival in business.

A sale of 600 used tools at the plant of the Nelson Blower & Furnace Co., South Boston, Mass., was the center of interest in the Boston market the past week.

The General Electric Co. has issued a new list of about 20 tools for a proposed new plant in or near Newark, N. J. For its Lynn, Mass., plant this company has bought 12 geared-head lathes and other tools.

New York

NEW YORK, Nov. 16.

The local machine-tool market remains exceedingly quiet. Some sellers see no signs of improvement, while a few report more inquiries in the past week though orders are no more frequent.

No further price reductions have been announced, and it is stated by sellers' representatives here that many machine-tool manufacturers are absolutely opposed to any reductions now. They maintain that costs are as high as they have been at any time; in fact, some tool manufacturers report their costs are going up, due to the decreasing volume of business.

The General Electric Co. is in the market again for a list of about 20 tools for a proposed new manufacturing plant in or near Newark. The list calls for 10 lathes and other miscellaneous tools. The Board of Education has received bids on six speed lathes and a large number of bench tools for use in the New York public schools.

The Cunningham Magneto Co., 56 Summer Avenue, Newark, N. J., has purchased tool room equipment and eventually will come into the market for production tools.

A fair volume of inquiries is in the market for electric traveling cranes. The Scranton Anthracite Briquette Co., Dickson City, Pa., which inquired for a 15-ton crane for coal handling has rented one locally. The Stanley Works, New Britain, Conn., will close this week for a 15-ton crane. Among recent sales were: Browning Co., a 20-ton locomotive crane to the Kutztown Foundry & Machine Co., Philadelphia; Champion Engineering Co., 5-ton 50-ft. span overhead traveling crane to the American Car & Foundry Co. for Chicago; Manning, Maxwell & Moore, Inc., 5-ton, 75-ft. span overhead traveling crane to the Howe Scale Co., Rutland, Vt.; Shepard Electric Crane & Hoist Co., two 3-ton, 22-ft. 3-in. span overhead traveling cranes to Weil Brothers, Michigan City, Ind.

The Chatham Die Casting Co., 138 Mott Street, New York, manufacturer of die castings and other metal products, has increased its capital from \$75,000 to \$200,000.

A machine shop addition to cost about \$100,000, including improvements in present machine works, will be erected by the Nuera Paper Co., Hadley, N. Y. Contract has been

let to the N. P. Cummings Construction Co., Glens Falls, N. Y. George M. Dunham is vice-president and general manager.

Kliegl Brothers, 240 West Fiftieth Street, New York, manufacturer of electrical specialties, awarded contract to W. J. Conrady, 475 Greenwich Street, for a new four-story brick factory, 57 x 100 ft., at 321-23 West Fiftieth Street, to cost about \$60,000. John H. Kliegl is head.

The Magnetic Pigment Co., 81 Fulton Street, New York, has increased its capital from \$30,000 to \$100,000.

The Western Electric Co., 195 Broadway, New York, has leased a one-story building at 505 St. Marks Avenue, Brooklyn, comprising about 20,000 sq. ft., for local works service.

Bateman & Companies, Inc., 347 Madison Avenue, New York, recently formed by a merger of seven manufacturers of agricultural and farm implements, headed by the Bateman Mfg. Co., Greenloch, N. J., has arranged for a stock issue of \$500,000.

The Max Klass Corporation, New York, has been incorporated, with a capital of \$300,000, by K. S. McIntyre, R. L. and M. Klass, 5 Union Square, to manufacture cutlery and other specialties.

The Linn-Cook Corporation, Brooklyn, is having plans prepared by Benjamin Driesler, 153 Remsen Street, architect, for a one-story automobile service and repair building on Thirty-fifth Street, near Fourth Avenue, 100 x 200 ft., to cost about \$75,000.

The United Electric Light & Power Co., 130 East Fiftieth Street, New York, has filed plans for the erection of a three-story electric power station, 30 x 100 ft., at 115 West Ninety-seventh Street, to cost about \$170,000.

The Steel Industries Corporation, 261 Broadway, New York, has called a meeting of stockholders on Dec. 2, to arrange for a dissolution of the company.

The Buckingham Steel Co., 5610 Second Avenue, New York, has filed plans for a one-story addition, 49 x 100 ft., to cost about \$15,000.

The Barrow Street Commercial Garage, New York, has leased the three-story building to be erected by the New York Railways Co., 165 Broadway, at 130-42 Barrow Street.

and 168-74 Christopher Street, for an automobile service and repair works. It will cost about \$30,000.

The Radio Corporation of America, Woolworth Building, New York, has completed plans for a wireless station at Tuckerton, N. J., to cost about \$400,000, including equipment. The J. G. White Corporation, 43 Exchange Place, is engineer.

The Interborough Auto Supply Co., Richmond Terrace, West Brighton, S. I., has filed plans for the erection of a one-story machine shop on Elm Court, near Richmond Terrace, 30 x 50 ft.

Mechanical Movement, Inc., Richmond Terrace, Staten Island, specializing in automobile equipment, has awarded contract to A. N. Eldridge, 8 Stuyvesant Place, St. George, S. I., for a new one-story building on Richmond Terrace to cost about \$10,000.

The Lexington Motor Co., 1848 Broadway, New York, has purchased the three-story building now being erected on Fourteenth Street, Long Island City, N. Y., by the Interstate Land Holding Co., 100 x 200 ft., for \$260,000. It will be used for a service and repair works, and it is proposed to add two stories at an early date. The company will utilize the entire space, now totaling 42,000 sq. ft., for its mechanical work.

The Department of Public Welfare, New York, has filed plans for a one-story power house at the Metropolitan Hospital, Blackwells Island, to cost about \$25,000.

A one-story power house addition, 75 x 98 ft., will be erected at the plant of the Utica Steam & Mohawk Valley Cotton Mills, Utica, N. Y.

Louis Axelbrad, Brooklyn, manufacturer of automobile bodies, has acquired a two-story building at 396 Fifteenth Street, for general car body production.

Belart Turner & Co., Inc., New York, has been incorporated, with a capital of \$25,000, by H. O. Ward, D. Steinhart and J. P. Turner, 653 Cauldwell Avenue, to manufacture metal specialties and other products.

The Franklin Appliance Corporation, Elizabeth, N. J., has filed notice of change of name to the Franklin Conduits Co., to manufacture conduits and other electrical specialties.

The Perth Amboy Dry Dock Co., Perth Amboy, N. J., will soon commence the installation of a new 10,000-ton dry dock at its plant at the foot of Broad Street. It will be 462 ft. long and 117 ft. wide, electrically operated, with capacity for vessels 500 ft. in length. Additional buildings to provide for extra equipment necessary for repair and construction of vessels will include a one-story shop, 70 x 108 ft., for boiler, plate and angle work; concrete and steel machine shop, 70 x 100 ft.; and forge shop, 70 x 90 ft. It is expected to give employment to about 1500 men.

The plant of the Evans Engineering Corporation, Old Bridge, N. J., designed for the manufacture of ammunition, will be sold by the United States Ordnance District Salvage Board, 1107 Broadway, New York. It comprises about 205 acres, with a total of 73 buildings, equipped with machine tools and general manufacturing apparatus.

Robert H. McAdams, Elizabeth, N. J., receiver for the Superior Body Co., Inc., 360 St. Georges Avenue, Rahway, N. J., manufacturer of automobile bodies, has been authorized to issue receiver's certificates to continue the business. The company's assets are said to total \$239,000 and the liabilities, \$76,000. Orders on hand aggregate \$319,500 and it is proposed to maintain operations at capacity for the production of more than 300 car bodies. The company was organized in September, 1919, and its present plant, with machinery, represents an investment of \$105,000.

The General Machine & Iron Works, Jersey City, N. J., has filed notice of organization to operate a plant at 101 Van Vorst Street.

The Park Auto Repair Works, 212 Elizabeth Avenue, Newark, N. J., has filed notice of organization to operate a machine and metal-working plant. Nicholas Mess, Jr., 106 West Street, heads the company.

The Ajax Battery Co., Inc., Passaic, N. J., has been incorporated, with a capital of \$500,000, by Richard J. Baker, Delos C. Gibson and Joseph H. Lefferts, to manufacture storage batteries.

William Steiner & Co., 297 Washington Street, Newark, have filed notice of organization to manufacture screw machinery and parts. William Steiner, 1059 Hunterdon Street, heads the company.

The International Body Corporation, 97 New Jersey Railroad Avenue, Newark, manufacturer of automobile bodies, recently organized with a capital of \$1,000,000 under Delaware laws, has increased this capitalization to \$10,000,000 for expansion. Its plant comprises a portion of the building formerly occupied by Gould & Eberhardt, manufacturers of machine tools. Arrangements have been perfected for the issuance of stock to the value of \$250,000. John Burke, treasurer of the United States, has resigned this office to

become president of the International company; G. A. Ortman is treasurer, and Thomas C. Burke, secretary.

The McAllister-Carton-Stulz Corporation, 1003 Broad Street, Newark, manufacturer of automobile parts, iron and steel accessories, etc., is having revised plans prepared for the erection of its proposed one-story service works on Broad Street, to cost about \$125,000. It is understood that bids will be asked at an early date. William E. Lehman, 738 Broad Street, is architect.

The Breeze Carburetor Co., 250 South Street, Newark, manufacturer of carburetors, ignition equipment, etc., has filed notice of change of name to the Breeze Metal Hose & Mfg. Co.

Seller & La Cerff, Newark, operating a welding works at 246 Central Avenue, are considering plans for enlargements.

A one-story power house, to cost about \$30,000, will be erected by the Duratex Co., Newark, at its leather manufacturing works at 134 Frelinghuysen Avenue.

The O. H. Smith Shop, Inc., New Brunswick, N. J., has been incorporated, with a capital of \$50,000, by Otto H. C. and Walter H. Smith, to manufacture metal products and operate a general machine works.

The Automatic Valve Engineering Co., Irvington, N. J., has been organized to manufacture valves and kindred engineering products. It is headed by Charles Dales, 88 Clark Street, Brooklyn, and I. Boyland, 25 Sherman Avenue, Irvington, N. J.

The Jephson-Scott Body Co., 24 Sterling Street, East Orange, N. J., manufacturer of automobile bodies, is completing plans for a new two-story and basement plant, 58 x 63 ft., on Sterling Street, to cost about \$70,000. The existing plant, 50 x 108 ft., will also be extended with another story. Marshall N. Shoemaker, 15 Central Avenue, Newark, is architect.

The St. Lawrence River Transmission Co., Potsdam, N. Y., has been granted permission by the Public Service Commission for the erection of a new electric power plant at Fowler, St. Lawrence County.

The Vortex Washer Corporation, Fabius, N. Y., has been incorporated, with a capital of \$50,000, by H. J. Thompson, J. L. and J. H. Delaney, to manufacture washing machines.

The Sommer-Olmstead Check Writer Corporation, Rochester, N. Y., has been incorporated, with an active capital of \$100,000, by W. J. Sommer, G. H. Kellogg and W. H. Olmstead, all of Rochester, to manufacture check writing machines and protective devices.

Philadelphia

PHILADELPHIA, NOV. 15.

The Union Petroleum Co., Marcus Hook, Pa., has begun work on an expansion program which includes the erection of several new buildings. Three structures will be located along Hook Creek, and foundation work will begin at an early date. A barrel house will be constructed, as well as a lubricating oil building. Work is nearing completion on a cooperage shop, and new machinery will be installed in this building at once.

The Clay Products Co. of America, 413 Liberty Building, Philadelphia, will soon begin construction on the main buildings at its new brick manufacturing plant at New Hope, Pa. It has a tract aggregating about 500 acres and about 20 acres will be used for initial operations. The different buildings will aggregate 100 x 500 ft., and with machinery are estimated to cost in excess of \$900,000. An industrial railroad line will be constructed and a steam shovel will be installed for clay mining work. H. E. Frankenfield is engineer.

Fire, Nov. 11, destroyed a portion of the erecting department at the plant of the Champion Blower & Forge Co., Harrisburg Avenue and Charlotte Street, Lancaster, Pa., with loss estimated at about \$25,000.

The Leonard M. Wilson Machine Co., Harriman, Pa., has been incorporated with a capital of \$50,000 by M. M. Wilson, Henry C. L. Schnoor and C. E. Powell, to manufacture machinery and parts.

The Belmont Packing & Rubber Co., 133 North Second Street, Philadelphia, has awarded a contract to the George Kessler Contracting Co., Drexel Building, for a two-story brick addition, 130 x 190 ft., to cost about \$60,000.

The Pennsylvania Wire Glass Co., Pennsylvania Building, Philadelphia, is considering the erection of an addition to its plant at Lewistown, Pa. Walter Cox is president.

The A. Taylor Co., Commonwealth Building, Philadelphia, manufacturer of iron and metal products, will hold in abeyance the erection of its proposed one-story plant, 60 x 200 ft., on Cedar Street, Kensington. It is expected to call for bids early in the spring.

The United Filters Corporation, 355 Cortland Street, Belleville, N. J., manufacturer of filtering machinery, has awarded contract to the Campbell Construction Co., Poplar Street, Hazleton, Pa., for extensions to the building recently acquired at Hazleton Heights for its new plant, estimated to cost about \$40,000. E. G. Swetland is general manager.

The Keystone Motors Co., Lewistown, Pa., will soon take bids for a new two-story service building, 180 x 200 ft., estimated to cost about \$100,000. Robert B. Montgomery is head.

The Adder Machine Co., Kingston, near Wilkes-Barre, Pa., manufacturer of visible adding machines, will hold in abeyance the erection of its proposed two-story plant, 73 x 115 ft., at Walnut and Hoyt streets, estimated to cost close to \$80,000 with equipment. It is expected that new bids will be asked early in the spring.

A one-story brick power house, 50 x 100 ft., to cost about \$52,000, will be erected by the Glen Knitting Mills, Philadelphia, at Twentieth and Clearfield streets.

The J. G. Brill Co., Sixty-second and Woodland streets, Philadelphia, manufacturer of railroad cars, trucks, etc., has arranged for the sale of equipment trust notes totaling \$152,000 and \$144,000 respectively.

The Camco Products Co., Camden, N. J., has been incorporated with a capital of \$500,000 by Oram A. Boyer, Elmer J. and John N. Carlson, to manufacture machinery and parts.

The Armstrong Truck Co., North Wales, Pa., manufacturer of trucks, parts, etc., is arranging for the early removal of its plant to a building north of the city limits, where increased facilities will be provided. The company has disposed of its present plant to John A. Harvey, Germantown, who will equip the factory for the manufacture of asbestos products.

The Reading Pattern Works, 551 Center Avenue, Reading, Pa., has perfected arrangements for the immediate erection of a new one-story plant on Clinton Street, 60 x 100 ft., to cost about \$15,000.

Buffalo

BUFFALO, NOV. 15.

The Disappearing Propeller Boat Corporation, Robinson Street, North Tonawanda, N. Y., is arranging for the immediate installation of machinery at its new plant. It is expected to begin operations in December. Neil Wilson is manager.

The Lower Niagara River Power & Water Supply Co., Lewiston, N. Y., has plans under way for a new hydro-electric generating plant on the Niagara River. H. L. Cooper & Co., 101 Park Avenue, New York, are engineers. J. J. Albright is president.

E. Ahr & Son, 1016 Lafayette Avenue, Buffalo, operating a machine and repair works for automobile and other service, have commenced the erection of a new one-story machine and repair works, 65 x 125 ft., at 1512 Main Street, to cost about \$25,000.

The Day Machinery Co., 66 Exchange Street, Buffalo, is planning for the installation of a number of machine tools at its plant, including boring mill, vertical drill, etc.

The Wilder Hardware Co., North Tonawanda, N. Y., has been incorporated with a capital of \$15,000 by W. I. Wilder, C. A. Heifer and J. N. Litz to manufacture hardware specialties.

The Louisville Power Corporation, Massena, N. Y., is having plans prepared for the erection of a new hydro-electric power plant on the St. Lawrence River, in the vicinity of Coll Island, N. Y. Walter G. Wilson is president.

The Batavia Car Works, Inc., Batavia, N. Y., recently incorporated with a capital of \$350,000, etc., has plans under way for its new plant. The initial works will comprise a main one-story building, 120 x 400 ft., fronting on the tracks of the Erie Railroad; a smaller unit, 33 x 34 ft., will also be constructed. John Bauket, an official of the company, is in charge. Others interested in the organization are R. M. Walker and A. J. Waterman.

The United States Hame Co., 135 Tonawanda Street, Buffalo, has filed notice of increase in capital from \$1,000,000 to \$1,500,000.

The Advance Sprinkler Co., Rochester, N. Y., has been incorporated, with a capital of \$100,000, by H. F. Weidel, D. A. Alexander and C. P. Downs, Rochester, to manufacture water sprinkling apparatus and systems.

The Rochester Castings Corporation, 193 Mill Street, Rochester, N. Y., has completed plans for a new one-story foundry, 200 x 400 ft., in the western part of the city. It will be equipped for the production of brass and bronze castings. Charles Wray is in charge.

Fire, Nov. 10, destroyed a portion of the plant of the Cortland Grinding Wheel Corporation, Cortland, N. Y., with loss estimated at about \$300,000, including machinery.

The Iroquois Utilities, Inc., City Bank Building, Syracuse, N. Y., has made application to the Public Service Commission for permission to build a new electric power plant on Cattaraugus Creek, Concord Township, for local power and light service. B. H. Shepard is president.

The Wardwell Hardware Co., Rome, N. Y., manufacturer of hardware specialties, has increased its capital from \$50,000 to \$100,000.

The Syracuse Fire Door Co., 701 Westcott Street, Syracuse, has filed plans for a one-story factory, 51 x 115 ft., on Canal Street, to cost about \$12,000.

The Geneva Foundry Corporation, DeWitt, Onondaga County, N. Y., has been incorporated, with a capital of \$500,000, by J. P. Rogers, C. H. King and G. A. Lancaster, to manufacture iron and steel castings.

Pittsburgh

PITTSBURGH, NOV. 15.

The machine-tool business remains at an extremely low ebb in this district, the explanation being found more in the expectation of lower prices than because the need does not exist for equipment. Many steel plants are in need of more boiler house and power equipment, as much of that now in use is worn out. Purchases, however, are extremely light and only where absolute necessity compels replacement. Little is going on in cranes. The only sale recently noted was one of two 10-ton overheads with 50-ft. span for the Detroit warehouse of the Truscon Steel Co., Youngstown. The Southern Ohio Iron Works, Cincinnati, has put out an inquiry for a 10-ton overhead with 43-ft. span. About the only encouraging feature of the crane market is the fact that some requests for prices for estimating purposes are coming out quite regularly, indicating future needs. Sales of individual machine tools are fairly good but the expectation of lower prices tends to retard the placing of sizable orders.

The Columbia Steel & Shafting Co., Carnegie, Pa., has preliminary plans under way for the erection of the first units of its new plant on Duss Avenue, Ambridge, Pa. The site comprises the former location of the Ambridge Steel Co., organized last year and which has since been dissolved. The main unit of the new plant will be one-story, 600 x 630 ft., and with adjoining structures is expected to allow for approximately double the present output of the company's plants at Carnegie and Rankin. The new works will specialize in the manufacture of cold finished steel and it is said that later equipment will be provided for the production of hot-rolled bars. The site has a frontage of about 1000 ft. on the Ohio River, and a loading and unloading plant will be installed for handling coal and raw materials, as well as finished products. The company will establish its headquarters at this point, occupying a three-story building, 60 x 200 ft., on Duss Avenue. No announcement has as yet been made as to the continuance of present plants, or whether operations will be concentrated at the new Ambridge works.

The Bailey Farrell Mfg. Co., Third Avenue and Ross Street, Pittsburgh, manufacturer of steam fittings, etc., has acquired the two-story brick and steel building, 120 x 212 ft., at South Twentieth and Sidney streets, Southside, for \$275,000. The present works on Third Avenue will be moved to the new location and facilities provided for increased production.

The American Foundry & Construction Co., 4700-32 Second Avenue, Pittsburgh, manufacturer of machinery and parts, castings, etc., will break ground about Nov. 20 for a one-story addition, 75 x 120 ft., to cost about \$18,000, contract for which has recently been let to the Pittsburgh Bridge & Iron Works, Farmers' Bank Building.

The Federal Foundry Supply Co., 2633 East Seventy-ninth Street, Cleveland, has completed plans for the erection of a two-story building, 40 x 92 ft., on property recently acquired at North Charleroi, Pa. Work will also begin at once on a new coal crushing plant.

The International Nickel Co., 43 Exchange Place, New York, is arranging a list of equipment to be installed in its new works at Huntington, W. Va., on a site recently acquired. The plant is estimated to cost in excess of \$2,000,000.

The Porters Block Coal Co., Huntington, W. Va., recently organized, is planning for the construction of a new coal tippie at Porters Creek, W. Va. Considerable miscellaneous machinery will also be installed. David Metheny is president, and W. J. Waugh, treasurer and manager.

The Windsor Coal Co., Beech Bottom, W. Va., has awarded a contract to the Austin Co., Union Arcade Build-

ing, Pittsburgh, for a two-story machine shop, 50 x 140 ft., to cost about \$50,000.

The Commercial Drop Forge Co., Warren, Pa., has been incorporated with a capital of \$240,000 by W. Treat Davidson, F. B. Bielaski and Lewis C. Jamieson, to manufacture drop forge specialties. Mr. Davidson was at one time chief engineer for the Hamilton Iron Works, and lately purchasing agent for the Struthers-Wells Co., both of Warren; Mr. Bielaski has been connected with different subsidiaries of the United States Steel Corporation, and Mr. Jamieson, who will act as secretary of the new company, was formerly secretary and treasurer of the Clarendon Refining Co., Clarendon, Pa.

The Englert Mfg. Co., Pittsburgh, is being organized by Harry N., Milton S., and Charles A. Englert, to manufacture iron, steel and other metal products. Application will be made for a State charter. Joseph R. Conrad, 607 B. F. Jones Building, represents the company.

The Gray Iron Foundry Co., 1236 West Ninth Street, Erie, Pa., is constructing by day labor a new one-story foundry, 80 x 200 ft., on Seventeenth Street, to cost about \$13,000. T. M. Light is in charge.

Fire, Nov. 7, destroyed a portion of the plant of the Pittsburgh Tube Co., Monaca, Pa., manufacturer of pipes and tubing, with loss estimated at \$40,000, including machinery.

The Charleroi Iron Works, Charleroi, Pa., is handling the erection of its addition under separate contract arrangement, and completion contracts are now being arranged. It will be located on a site fronting on the Pennsylvania Railroad and will be one-story, 100 x 200 ft., estimated to cost \$75,000.

With the completion of extensions and improvements at the plant of the United States Chain & Forging Co., Huntington, W. Va., arrangements are being made to develop a monthly capacity about 50 per cent in excess of previous output. L. J. Hudson is manager.

Catalogs Wanted

The Lewis Foundry & Machine Co., Pittsburgh, manufacturer of rolling mill machinery, is revising its catalog file and desires literature illustrating equipment used in the manufacture of rolling mill machinery. Catalogs should be addressed to the engineering department, 305 Ferguson Building.

Chicago

CHICAGO, NOV. 15.

Interest of the trade is again centered in the railroads. The Santa Fé has bought three driving wheel lathes upon which it has been figuring for several weeks and has issued a new list which will represent an outlay of about \$200,000. This inquiry calls for the following:

- One 100-in. heavy duty type boring mill.
- One double-head slotter for slotting locomotive frames—stroke of stoker, 24 in.
- One 100-in. heavy duty type tire boring mill.
- Four 6-ft. plain heavy duty type radial drills.
- One 600-ton belt-driven driving wheel press.
- One locomotive cylinder boring machine.
- One 96-in. plain heavy duty radial drill.
- Two 24-in. heavy duty slotters.
- One 72-in. x 72-in. x 40-ft. heavy duty planer.
- One 96-in. x 96-in. x 16-ft. heavy duty cylinder planer.

Quotations on this equipment are to be on the basis of delivery in June, 1921. The machines represent part of equipment, amounting to over 100 tools, which will be needed for a machine shop and boiler shop now under construction at Albuquerque, N. M. The purpose in sending out an inquiry for the heavier tools at this time is to enable the railroad to pour the concrete for the special foundations needed. It is estimated that the entire equipment of the shops will cost \$1,500,000.

The Santa Fé inquiry is the outstanding feature of an otherwise stagnant market. While a few orders for single machines are being booked, less business is being done than last week. Among the few users inquiring for equipment is the Leader Iron Works, Decatur, Ill., which wants a 31-in. radial drill with tapping attachment and a 12-ft. plate bending roll. An inquiry has been received from J. C. Austerberry, machine tool dealer, Detroit, for the following machines, either new, or second-hand. One gate shear, having a capacity to shear $\frac{1}{2}$ x 72-in. steel; 6-ft. shear with

capacity for No. 12 gage steel; a wire straightener and cutting-off machine, capacity $\frac{1}{2}$ to $\frac{3}{4}$ -in. wire; 72-in. gear hobbing machine; No. 3 die-sinking machine, and nut tapping machine, capacity $\frac{1}{2}$ to $\frac{3}{4}$ -in.

No further price reductions have been reported. On the contrary, a few minor open lines have announced advances. A line of surface grinders, drill grinders and universal cutter and tool grinders has been raised 10 per cent. Two manufacturers of balancing machines have made advances of 10 per cent, and a line of small surface grinders has gone up a like amount.

The Standard Electric Mfg. Co., 216 North Clinton Street, Chicago, has let contracts for a two-story plant, 125 x 162 ft., at 925-39 Wrightwood Avenue, to cost \$135,000.

The Industrial Mfg. Co., manufacturer of tools, 408 North Sacramento Avenue, Chicago, has let a contract for a one-story addition, 50 x 130 ft., to cost \$8,000.

The Gill Mfg. Co., manufacturer of automobile parts, 8300 South Chicago Avenue, Chicago, has had plans prepared by James Burns, architect, 64 West Randolph Street, for a one-story plant, 81 x 120 ft., to cost \$21,000. For the present merely the exterior will be completed and the structure will be used temporarily for storage. Subsequently the interior will be completed and equipped for manufacturing purposes.

The Burns Croft Co., care of Arthur Jacobs, architect, 138 North La Salle Street, Chicago, has let the general contract for a one-story die-casting plant, 100 x 124 ft., at 2225-2239 Herndon Street, to cost \$55,000.

The Lindsay Light Co., 461 East Grand Avenue, Chicago, has received preliminary bids through Ernest A. Mayo, architect, 53 West Jackson Boulevard, on a one-story and mezzanine floor plant, 250 x 450 ft., to cost \$950,000.

The Parmalee Transfer Co., 202 South Clark Street, Chicago, is receiving bids on a one-story garage, 150 x 180 ft., at West Monroe Street and Racine Avenue, to cost \$100,000.

Arthur J. Traeger has opened the Peoria Machine Shop, 605 Franklin Street, Peoria, Ill., and is specializing in cylinder grinding and work on oversize piston rings, wrist pins, gears and flywheel gears.

The Selway Steel Post & Fence Co., Des Moines, Iowa, was recently ordered into receivership. It had a capital stock of \$2,000,000.

The Champion Mfg. Co., Dubuques, Iowa, has been organized with \$50,000 capital stock to manufacture concrete machinery. The incorporators include Ernest T. Wege, John J. Curran and Patrick A. Walsh.

Woodruff & Edwards, 109 North State Street, Elgin, Ill., are constructing a foundry addition to cost \$30,000.

Frederick Holmes, Dallas Center, Iowa, has purchased property in Iowa Falls with a view to constructing a sheet metal working shop this fall. He now has a factory in Dallas Center and will move the equipment to Iowa Falls when the building is completed.

The Universal Machine & Tool Co., 4146 West Taylor Street, Chicago, is having plans prepared for the erection of a new two-story brick plant, 60 x 265 ft., to cost about \$100,000, including machinery. A. A. Tocha, 1225 North Ashland Avenue, is architect.

The Torchwelt Equipment Co., Chicago, manufacturer of welding apparatus, has increased its capital to \$150,000.

The Union Stock Yards Casting Co., 834 West Thirty-ninth Place, Chicago, will defer the erection of its proposed one-story foundry, 60 x 125 ft., on South Morgan Street, until next spring. L. E. Ritter, 140 South Dearborn Street, is architect.

The American Rubber Co., Chicago, has preliminary plans under way for new work at Centralia, Ill., including a powerhouse and office. W. W. Cook is president.

Fire, Nov. 8, destroyed the locomotive and car shops of the Denver & Salt Lake Railroad, Denver, Col., at Utah Junction, a suburb, with loss estimated at \$400,000, including machinery.

Stockholders of the Belden Mfg. Co., 2300 South Western Avenue, Chicago, manufacturer of electrical appliances, have rescinded the recently authorized increase in capital from \$2,000,000 to \$4,000,000, and have voted for an increase in capitalization to \$3,000,000.

The Sexton Mfg. Co., Fairfield, Ill., is having plans prepared for a two-story machine shop at its knitting mills to cost about \$50,000.

New England

Boston, Nov. 15.

Although the machine-tool market continues dull, the outlook appears brighter than present conditions indicate. It has been learned that several leading manufacturers in this section have held back purchases of equipment in the expectation of lower prices, but it is believed that at least some of these will take definite action soon. The sale this week of some 600 machine tools at the plant of the Nelson Blower & Furnace Co., South Boston, may temporarily influence the local market, although large machine tool interests profess no uneasiness on this score. Another favorable feature is the lack of requests for cancellations. In contrast, a Worcester concern and others elsewhere are pressing local representatives for delivery on equipment purchased some time ago. In a few instances New England tool makers are stocking popular selling types, having very nearly caught up with orders, but the industry as a whole is not following this example, and it is safe to assume there is no large surplus supply of equipment in manufacturers' hands.

The General Electric Co., West Lynn, Mass., has purchased most of its needs for the experimental department, but has still to cover, however, on a few tools with special attachments. One of its purchases was 12 geared-head lathes. The U. S. Cartridge Co., Lowell, Mass., has bought several No. 52 Bliss presses and other special production equipment to increase the output of its automobile radiator department. The Noyes-Buick Co., Commonwealth Avenue, Boston, is in the market for small machine-shop equipment, production drills and other tools. New England railroads are not interested in the market at present, although one has issued a budget for 1921 machine shop equipment, prices on which are requested. Based on present market values the list involves between \$70,000 and \$80,000. A Gardner, Mass., concern has purchased a Gray 24-in. x 6-ft. lathe, 16-in. x 6-ft. Flather lathe, and a Sibley upright drill, and is inquiring on other tools. Brierly-Lombard, Worcester, Mass., are in the market for two milling machines, two shapers and two lathes. A Holyoke, Mass., manufacturer has bought a 26-in. shaper.

The used machine-tool market is even quieter than the new, due to the willingness of some houses to cut prices, the apparent weakness of values having a tendency to check what little prospective buying appears. Philadelphia used tool interests have unsuccessfully endeavored to sell equipment in this market the past week or two.

The crane market is slightly more active, several prospects having developed recently. The Howe Scale Co., Rutland, Vt., has purchased a 5-ton crane with a large span and magnet and grab bucket, while the Bridgeport Screw Co., Bridgeport, Conn., has awarded a contract for a steel runway, crane and monorail to cost approximately \$10,000.

The demand for small tools has dropped to small proportions, especially for high-speed drills, prices for which recently were marked down approximately 10 per cent. Carbon drills are in moderate demand and steady. Three-groove reamer manufacturers have advanced prices 10 per cent, milling machine arbors as much, while common mandrels are 5 points higher and expanding kinds cheaper.

Landers, Frary & Clark, New Britain, Conn., cutlery, have taken out permits for two steel manufacturing buildings, 50 x 150 ft. and 50 x 160 ft., respectively, to be erected in the near future.

The Sea Sled Co., Boston, has leased the yard and shop previously operated by Wood & McClure, Mystic, Conn., boat builders, to manufacture speed craft.

The plant of the Lord Construction Co., Providence, R. I., is being dismantled and the equipment shipped to the Lord shipyard in the vicinity of New York. It was erected during the war to build Ferris type wooden vessels.

The Alsatian Machine Works, Ltd., Boston, with a capital of \$300,000, has been incorporated under Massachusetts laws to take over the going business of the Alsatian Machine Co., Worcester, Mass., textile machinery. Edward W. Atkinson, Brookline, Mass., is president, and Frank Percival, Boston, treasurer.

The Wilton Tool & Mfg. Co., Roxbury, Boston, is offering for sale its master gage block department and general machine shop equipment, which at the present market value is estimated at between \$150,000 and \$200,000. The equipment includes 40 screw cutting lathes; 20 Brown & Sharpe, Rockford, Becker and Pratt & Whitney milling machines; 15 Stark & Ames bench precision lathes; 12 Barnes, Sibley, Allen & Henry Wright drills; automatic screw machines, tool grinders, planers, shapers, flat turrets, hand screw machines, thread millers, power presses, etc., most of it not much more than a year old. The company made a master gage block in competition with the Johansson.

A permit has been issued for the erection of a boiler

house at the plant of the Stevens Duryea Co., Chicopee, Mass., automobiles.

Jackson & Moreland, 387 Washington Street, Boston, engineers, are asking bids on equipment for an addition to the power plant of the Tricon Co., Tricon, Ga.

Plans for the \$100,000 truck service station, contemplated by the Federal Truck Sales Co., Reservoir Avenue, Providence, R. I., will be figured again early next spring. The original plans called for a one-story structure.

The General Research Corporation, Providence, R. I., has been incorporated, with a capital of \$300,000, by Henry C. Hart, Patrick P. Curran, and Karl Karkas, 147 Wheeler Avenue, Cranston, R. I., to manufacture electrical specialties.

The Bangor Railway & Electric Co., Bangor, Me., is having plans prepared for a new electrically operated pumping plant, two stories, 70 x 75 ft., at Old Town, Me. Crowell & Lancaster, Exchange Building, Bangor, are architects.

Harry C. Angle, Malden, Mass., has acquired property on Main Street for the establishment of a new machine shop and repair works.

The Tuxis Metal Co., Meriden, Conn., has been incorporated, with a capital of \$50,000, by J. and P. M. White, Meriden, and M. J. Lifsher, New Haven, to manufacture metal products.

The Lynnway Aircraft Corporation, Lynn, Mass., is negotiating with the city for the purchase of about 57 acres on Broad Street for the establishment of a general airplane works.

The Cowles Electric Co., New Britain, Conn., has been incorporated, with a capital of \$25,000 by W. B. and C. J. Cowles and F. J. C. Ensworth, all of New Britain, to manufacture electrical products.

The S. A. Woods Machine Co., 24-34 Damrell Street, Boston, manufacturer of machinery and parts, has filed plans for a new machine shop, to cost about \$35,000.

The Fairbanks Storage Battery Co., 438 Atlantic Avenue, Stamford, Conn., has taken bids for a one-story building, 50 x 150 ft., on West Avenue, Norwalk, Conn., to cost about \$50,000. Emmens & Abbott, Washington Building, Stamford, are architects.

The Columbia Graphophone Mfg. Co., Bridgeport, Conn., manufacturer of talking machines and parts, has filed notice of increase in capital from \$165,000.00 to \$315,000.00.

The Caviroli Polishing Machine Co., 125 Water Street, Quincy, Mass., has acquired property at 5 Woodworth Street, Dorchester, Mass., for a new machine shop. Improvements and alterations to cost about \$10,000 will be made.

The Worthington Pump & Machinery Corporation, Appleton Street, Holyoke, Mass., has completed plans for remodeling a building at North Bridget and East Dwight streets, in connection with its local plant, estimated to cost in excess of \$25,000.

The Wave Electric Co., Brockton, Mass., has been incorporated with a capital of \$100,000 by Charles F. Hatch, Arthur G. Cole and Herman Dewhurst, East Bridgewater, Mass., to manufacture electrical products.

The Union Electrical Supply Co., Providence, R. I., manufacturer of electrical specialties, has increased its capital from \$50,000 to \$200,000.

The Eagle Lock Co., Terryville, Conn., manufacturer of locks, hardware, etc., is arranging for an increase in its capital stock, to be used in part for extensions. It is completing plans for the erection of an addition to its power plant. The present capitalization aggregates \$1,000,000.

Baltimore

BALTIMORE, Nov. 15.

The Gibson & Kirk Co., Baltimore, recently incorporated, will take over the plant and assets of the Thomas Engineering Co., 215 Key Highway, and will continue operations for the manufacture of brass and other marine hardware. Plans are under way for a one-story foundry addition, 30 x 90 ft., for the production of brass castings. T. W. Thomas is president, and I. C. Griggs, secretary and treasurer.

The Bond Machine Co., Fifth and Monroe streets, Wilmington, Del., manufacturer of special machinery, and the Modern Machinery Co., at the same location, specializing in a similar line, have been merged under the name of the Modern-Bond Co.

The International Metal Products Co., Wilmington, Del., has been incorporated, with a capital of \$500,000, by John P. Cann, M. N. Tyson and Harry McKeown, all of Wilmington, to manufacture steel barrels, drums and kindred products.

Electrical equipment, boilers and boiler apparatus, ash and coal conveyors, and other mechanical apparatus will be installed by the Coca-Cola Co., Pratt and Concord streets, Baltimore, in connection with its new works on Fort Avenue, plans for which have been completed. The buildings will be

one, two and five stories and are estimated to cost in excess of \$800,000. F. Travers Wood will be superintendent in charge of construction.

The Peters Auto Body & Spring Works, Ensor and East streets, Baltimore, is considering plans for the enlargement of its works. Charles T. H. Peters is head.

The Bureau of Yards and Docks, Navy Department, Washington, is arranging for the rebuilding of the naval air station at Anacostia, Va., near Washington, recently destroyed by fire, with loss estimated at \$250,000. The new works will include shops, hangars and other buildings, with equipment for airplane construction and repair.

The Virginia Navigation Coal Co., Inc., 1 Broadway, New York, is arranging for the early sale of its coal briquetting plant near South Norfolk, Va., including 90 acres in this district. In addition to regular briquette producing works, the plant consists of a machine shop, coal storage and reclaiming system, equipment for handling and loading, locomotive crane and other apparatus. Offices are also maintained at 117 Main Street, Norfolk, Va.

The Simmons Mfg. Co., Goldsboro, N. C., manufacturer of furnace grates and other iron specialties, is considering the erection of a new plant at Wilmington, N. C., to cost about \$200,000, including machinery.

The City Council, Kinston, N. C., has arranged for a fund of \$300,000 for the construction of a new municipal electric light and power plant, steam operated. Joseph Dawson is mayor.

The Savannah Coal & Dock Co., Savannah, Ga., recently organized, has acquired the former shipyard of the Foundation Co., New York, at this place, and has perfected plans for the immediate erection of a new coal loading and handling plant, to cost about \$200,000, including hoisting, conveying and other machinery. It will have a capacity of about 75,000 tons of coal per month, and will be augmented by a larger plant during the coming year with a daily capacity of about 10,000 tons of coal estimated to cost about \$5,000,000, with equipment. Grant I. Taggart, of the Taggart Coal Co., Savannah, is interested in the new enterprise; George A. Owen, of the A. Bentley & Sons Co., Toledo, Ohio, is vice-president.

The Tredegar Iron Works Co., Richmond, Va., has tentative plans under way for rebuilding the portion of its plant recently destroyed by fire. It will be one-story, and is estimated to cost in excess of \$150,000. Archer Anderson is president.

The Baltimore Car & Foundry Co., Curtis Avenue, Curtis Bay, Baltimore, is planning for the erection of two one-story additions, to cost about \$20,000.

Mechanical equipment, refrigerating and ice-making machinery, electrical apparatus, motors, etc., will be installed in the new plant to be erected at a cost of \$300,000 by the Horn Ice Cream Co., 446 Aisquith Street, Baltimore.

The Star Motor Co., Frederick, Md., has been incorporated, with \$200,000 capital stock, by Grayson H. Staley, J. Murry Dronenburg and William W. Dowd, to manufacture automobiles, tractors and farming implements.

The Cook Air Valve Co., Charlotte, N. C., has been incorporated, with \$25,000 capital stock, by William J. Cook, Wilson M. Crosby and H. T. Maner.

The Reus Brothers Co., 146 West Mount Royal Avenue, machinist, which sold a completed plant to the Steinmetz Electric Motor Car Corporation, has purchased a factory building at Eager Street and the Fallsview in which its manufacturing business will be centralized.

The William F. Yingling & Son Co., Inc., 1049 Cathedral Street, Baltimore, has been incorporated, with \$25,000 capital stock, by V. A. Yingling, Charles F. Kaufman and H. E. Scherf, to repair motor vehicles.

Lyon, Conklin & Co., Inc., 13 Balderston Street, Baltimore, manufacturer of roofing, etc., will erect a brick plant, 238 x 435 ft.

Detroit

DETROIT, Nov. 15.

The local machine-tool market remains almost totally inactive, no change being noted from last week.

At a stockholders' meeting of the General Machine & Tool Co., Jackson, Mich., it was decided to change its name to the Vulcan Engineering Corporation. It was felt that the former name was misleading in view of the present product, which is automobile and truck axle assemblies.

The Superior Steel Castings Co., Benton Harbor, Mich., will put its new malleable iron foundry into operation this month. The new building is 142 x 360 ft., with two wings, each 60 x 60 ft. The cost of the plant was about \$175,000, exclusive of the site, and the layout is such that it can be duplicated at any time.

The Continental Garage Tool Co., Jackson, Mich., has been organized with a capital of \$50,000 to manufacture machinery and automobile repair tools. The incorporators are Casper Haehnle, O. E. Eckert and William G. Berger, all of Jackson.

The Motor City Stamping Co., Detroit, manufacturer of stamped metal products, has rejected all bids for its proposed plant on Knodell Street and will hold the project in abeyance until spring. The factory will be one-story, 98 x 100 ft., and it is estimated to cost about \$70,000. Stahl & Kinsey, 435 Woodward Avenue, are architects.

The Auto Indicator Co., Grand Rapids, Mich., manufacturer of automobile signal devices, operating with a capital of \$400,000, has changed its name to the Automobile Signal Co.

The Pontiac Lawn Mower Co., Detroit, manufacturer of lawn mowers and other hardware products, has increased its capital from \$50,000 to \$200,000 and changed its name to the Moto-Mower Co.

The Perkins Structural Steel Co., 1603 Garland Street, Flint, Mich., has filed plans for a one-story building on Davison Road, 60 x 200 ft.

The P. S. G. Tool Co., Detroit, has been organized by Edward and Otto Proefke, 995 Frederick Avenue, to manufacture tools, jigs, machine parts, etc.

The Jackson Stove & Stamping Co., Jackson, Mich., has increased its capital from \$200,000 to \$1,150,000.

The Independent Stove Co., Detroit, manufacturer of stoves, ranges, etc., has increased its capital from \$350,000 to \$600,000.

The P. & G. Stamping Co., Detroit, has been organized by Henry Gottbode and Albert J. Peters, 897 Beniteau Boulevard, to manufacture stamped metal products.

The Gear Grinding Machine Co., East Grand Boulevard, Detroit, will defer indefinitely the erection of its new two-story building, estimated to cost in excess of \$50,000.

The Kalamazoo Railway Supply Co., Kalamazoo, Mich., manufacturer of railroad equipment, has filed notice of increase in capital from \$300,000 to \$600,000.

The General Machine & Iron Works, Sixteenth and Pine streets, Detroit, has awarded a contract to R. D. Runnings, 945 Vermont Street, for a one-story and basement addition, 40 x 100 ft., to cost about \$55,000. E. F. Schmidt is secretary.

The Tiltlok Steering Wheel Co., Detroit, has been organized by H. P. Wilson and William F. Fiedner, 406 Edison Avenue, to manufacture steering gears and devices for automobile service.

The Wright-Fisher Bushing Co., Detroit, manufacturer of bushings for motor car service, has acquired property at Holly, Mich., for its new plant. W. R. Fisher, president, has issued a statement that his company has no connection with the Wright-Fisher Engineering Co., Detroit, as recently announced.

Cleveland

CLEVELAND, Nov. 15.

The volume of machine-tool inquiry shows a little improvement, but orders are apparently no more plentiful. Prospective buyers continue to insist on price reductions, which is the principal reason for deferring the placing of orders. No further price changes are reported.

The only large list issued in this market recently, that of the National Lamp Works for 125 machine tools for its new Buffalo plant, has been held up, but it seems certain that this equipment will be purchased as the company is going ahead with the construction of the plant. Several good inquiries have come out for screw machines, but it is doubtful if they will be placed before the first of the year. The Glauber Brass Works Co., Cleveland, the past week placed an order with a local manufacturer for eight turret lathes. The General Electric Co. is inquiring for three geared head lathes for its Erie works.

The Central Metal Products Corporation, which has been formed through the consolidation of the Zahner Metal Sash & Door Co., Canton, Ohio, and the Empire Art Metal Co., College Point, L. I., has completed its organization. Ample working capital is being provided and increased facilities will be afforded for manufacturing hollow metal doors and trim and for service. The executive offices will be in Canton, and sales offices, or agencies, will be maintained in principal cities. The new officers are: President, E. A. Williams, Jr., president Garford Motor Truck Co., Lima, Ohio; vice-president and general manager, C. R. Jamison, formerly works manager and general sales manager Berger Mfg. Co., Canton; secretary and treasurer, H. R. Grable, formerly secretary and treasurer Zahner Metal Sash & Door Co.; general sales manager, Harry G. Bow, formerly president

and general manager Canton Metal Products Co.; Eastern manager, A. J. Connell, College Point, L. I., formerly vice-president Empire Art Metal Co.

The Lincoln Revolving Transformer Co., Cleveland, has been organized by J. C. Lincoln, president Lincoln Electric Co., to manufacture a revolving type of transformer developed by Mr. Lincoln. The company has established a plant at 2400 Woodland Avenue and is inquiring for a lathe, shaper, milling machine, grinding machine and tool presses.

The Keystone Bolt & Nut Co., 502 Ulmer Building, Cleveland, is planning the erection of a two-story factory, 50 x 100 ft., on East Ninety-third Street, to manufacture carriage and machine bolts and cap screws by the cold process. It is inquiring for four upsetting machines, two cold nut making machines, three bolt cutters, two automatic tapping machines, four roll threading machines and tool room equipment. The company is incorporated with a capital stock of \$10,000, which will be increased. James Krejci is president and John Krejci, secretary-treasurer.

The Kenney Foundry & Mfg. Co. has placed in operation its new plant in Lexington, Ohio, comprising a foundry, 90 x 200 ft., and a machine shop. It formerly operated a plant in Mansfield, Ohio, which was burned recently. The general offices will remain in Mansfield.

The Quick Change Chuck Co. is completing a new plant in Arcanum, Ohio, which it expects to place in operation about Dec. 1. It has dismantled its plant at Dayton, Ohio, and removed the equipment to the new Arcanum plant.

The Libbey-Owens Co., Toledo, Ohio, will build a new glass manufacturing plant in Canada, which will be operated by an independent organization to be known as the Canadian Libbey Co., and will probably be erected in Toronto.

Indiana

INDIANAPOLIS, NOV. 15.

The Indestructible Wheel Co., Lebanon, Ind., will soon award contract for its new one-story plant, 80 x 120 ft., for the manufacture of steel wheels for pleasure automobiles and motor trucks, estimated to cost in excess of \$50,000. A. M. Lofland is secretary and treasurer.

The City Council, Columbia City, Ind., will take bids at once for the construction of its new one-story municipal electric lighting plant to cost about \$40,000. Charles Brossman, 1503 Merchants' Bank Building, Indianapolis, is engineer.

The Bates Expanded Steel Truss Co., 208 South La Salle Street, Chicago, manufacturer of steel poles, etc., has awarded a contract for a one-story addition, 100 x 135 ft., to its plant on Forsythe Avenue, East Chicago, Ind., to Frank G. Wall, East Chicago. A. J. Bates is secretary and manager.

The Lavelle Foundry Co., Anderson, Ind., has construction under way on an addition for the production of gray iron castings. It is arranging for the early purchase of equipment.

The Sandusky Cement Co., Cleveland, will hold in abeyance until next spring the erection of its proposed new works at Logansport, Ind., estimated to cost about \$50,000.

The Muncie Machinery & Supply Co., Muncie, Ind., has changed its name to the Muncie Steel Supply Co.

The Terre Haute Shovel & Tool Co., Terre Haute, Ind., has filed preliminary articles of dissolution.

The Western Drop Forge Co., Marion, Ind., has increased its capital stock from \$1,000,000 to \$2,000,000.

The George W. Rank Motor Device Co., Indianapolis, has been incorporated with \$100,000 capital stock to manufacture shock absorbers and other motor devices. The directors are William H. Diddel, 4006 Guilford Avenue; Roy F. Rich and George W. Rank.

Cincinnati

CINCINNATI, NOV. 15.

Some local machine-tool builders are putting part of their output into stock, while others are busy clearing up old orders, and in some cases orders booked are sufficient to keep plants operating until the first of March. Every effort is being made to keep organizations intact and in some instances this is now done by reducing the number of working hours per week and stocking part of the output. How long this will continue depends upon conditions in the machinery trade, as makers do not feel inclined to stock too many tools at the present manufacturing costs and run the chance of price declines. For this reason it is asserted that if any price readjustments are made they must be accompanied by corresponding decreases in production costs. During the week new orders were slightly ahead of cancellations and while the volume of business booked was

comparatively small, a better feeling prevails in the trade. Dealers report business quiet also in used tools.

The Peerless Die & Tool Realty Co., Cincinnati, has been organized with a capitalization of \$10,000 as a holding company for the new factory of the Peerless Die & Tool Co., now being erected on Colerain Avenue. It will also handle the production of the company's plant at Opera Place. H. B. Acker, W. A. Freitag and Fred Kainstat are the incorporators.

The Cincinnati Machine Products Co. has leased property at 3096 Colerain Avenue, Cincinnati, for a machine shop and will occupy the building early in December.

The Ault & Wiborg Co., Cincinnati, manufacturer of dies, has applied for a permit for the construction of a five-story factory on Dana Avenue, Evanston, to cost \$110,000. It will be of brick and reinforced concrete.

The C. L. Greeno Co., spring manufacturer, Main Street, Cincinnati, whose plant was recently badly damaged by fire, is contemplating the erection of a one-story fireproof building in the Northside section. Ground has been acquired and plans for the structure, which will cover 35,000 sq. ft., are being prepared by Samuel Hannaford & Sons, architects. It is expected that construction will commence early in the spring.

The Worthington Pump & Machinery Corporation, Elmwood Place, Cincinnati, has awarded to the Hazen-Jones Co. the general contracts for a steel and reinforced concrete addition to its Laidlaw plant. It will be used as a cleaning room for castings.

The Dayton Pump & Mfg. Co., Dayton, Ohio, has been authorized to increase its capitalization from \$1,500,000 to \$1,800,000.

The Thomas & Armstrong Co., London, Ohio, sheet metal manufacturer, has been authorized to increase its capitalization from \$30,000 to \$50,000. It recently took possession of its new factory building.

Milwaukee

MILWAUKEE, NOV. 15.

Machine-tool manufacturers are booking a small amount of business, but volume is lacking. No requirements of size are being placed, buyers still maintaining a waiting attitude, not only regarding developments in prices but in the general situation as it affects the demand for metal products. Output generally is still declining, obviating the purchase of new tools save for urgent replacement. The lack of interest from railroads is disappointing, for much had been expected from this source by this time.

The Oliver Mfg. Co., Chicago, a pioneer manufacturer of automobile and vehicle lifting jacks, wrenches, tools, etc., has disposed of its entire interests to Milwaukee capitalists, represented by Helmus B. Wells, 756 Park Street. A new corporation of the same name has been chartered in Wisconsin to continue the business, which will be transferred to Milwaukee immediately. The capital stock of the new concern is \$75,000. Mr. Wells has been for 14 years secretary of the Northwestern Malleable Iron Co., Milwaukee. He is resigning to become president and general manager of Oliver company, although retaining an interest in the Northwestern company.

The A. J. Lindemann & Hoverson Co., Milwaukee, manufacturer of stoves and heaters, has increased the authorized capitalization from \$500,000 to \$1,000,000. Enlargement of the works at First and Cleveland avenues has been going on for the past year. August J. Lindemann is president.

The Automotive Foundry Co., LaCrosse, Wis., has increased its capital stock from \$100,000 to \$200,000 to accommodate the expansion of its business. It was established last spring.

The Challoner Co., Oshkosh, Wis., manufacturer of wood and metal sawing tools, anti-skid appliances for motor trucks, and other metal specialties, has started work on the erection of a one-story addition, 51 x 60 ft., to the drop forging shop. It will cost about \$40,000, including equipment now being placed. The new facilities will be ready about Jan. 1.

The Phoenix Mfg. Co., Eau Claire, Wis., has increased its authorized capitalization from \$250,000 to \$750,000. It manufactures sawmill machinery, log loaders, logging equipment, etc.

The Board of Education, Antigo, Wis., has under consideration competitive plans for a new junior high school and vocational training institute, estimated to cost about \$250,000 fully equipped. It is planned to start work by Jan. 1.

The Modern Steel Casting Co., 1400 Thirty-third Street, Milwaukee, sustained an estimated loss of \$15,000 by fire

on Nov. 9. Operations were resumed Nov. 11. The company contemplates the erection of a new foundry on another site during the coming year. Leo G. Smith is general manager.

The Frost Fishing Tackle Co., Stevens Point, Wis., has acquired the plant, equipment and business of the Bings Weedless Fish Hook Co. of Milwaukee and will consolidate the operation with its own. William Koegler is retained as superintendent.

The National Metal Products Co., North Milwaukee, Wis., has increased its capitalization from \$35,000 to \$75,000 to take care of the growth of its business.

The Madison Tool & Stamping Co., 613 Williamson Street, Madison, Wis., has increased its capital stock from \$10,000 to \$25,000. Lorenz Maisel, for 10 years general superintendent Burgess Battery Co., has acquired an interest and will become active in the management.

Hanneman & Gertsch, Waupaca, Wis., who recently purchased the plant and equipment of the Rosche Foundry Co., have completed improvements and additions and reopened the shop Nov. 10. It will do a jobbing business in gray iron castings as before, but on an increased capacity.

The Sprecher Mfg. Co., Milwaukee, has been chartered to manufacture lighting fixtures. The capital stock is \$100,000 and the incorporators are R. J. Plehler, A. A. Sprecher, and Peter W. Sprecher, proprietor of the Milwaukee Gas & Electric Fixture Co., 1910 Fond du Lac Avenue.

The Roll Mfg. Co., Fond du Lac, Wis., has been incorporated with a capital stock of \$50,000 by Edward R. Roll and Arnold H. Roll to manufacture automotive accessories and parts.

The Milwaukee Flush Valve Co., 1017 Clybourn Street, Milwaukee, has increased its capital stock from \$30,000 to \$75,000. It will enlarge its shop during the coming year.

The Hartford Tool & Machine Co., Hartford, Wis., is increasing its floor space about 30 per cent and will install a number of new tools and other equipment. Fred Jordan is president.

The Racine Engineering Co., Racine, Wis., has changed its authorized capitalization from \$250,000 of preferred stock to \$100,000 preferred and 1000 shares of common stock without par value.

The American Rotary Engine Co., Wisconsin Rapids, Wis., which recently was incorporated for \$250,000, has arranged for the first unit of its plant to be used mainly for experimental and development work. It will be 50 ft. sq., one story, of brick and concrete, and cost about \$25,000. J. A. Cohen is treasurer.

J. C. Fitzgerald, Kilbourn, Wis., will erect a machine shop early in the spring for the manufacture of a patented portable self-feed drill upon which he has recently been granted letters patent.

The Board of Education, Two Rivers, Wis., will take bids Dec. 1 for the construction of a three-story high school building, 80 x 175 ft., containing vocational training departments. It will cost about \$400,000 complete. The architect is John D. Chubb, 109 North Dearborn Street, Chicago.

The Wisconsin-Minnesota Light & Power Co., Eau Claire, Wis., has plans for enlarging its steam generating plant at LaCrosse, Wis., at an approximate cost of \$500,000 during the coming year. Details are not yet available. F. G. Felton is manager at LaCrosse.

The E. G. Pannier & Son Co., Chippewa Falls, Wis., has engaged Schlitz & Bailey, architects, 53 North Jackson Boulevard, Chicago, to design a one-story brick, steel and concrete building, 120 x 200 ft., to be used for manufacturing, assembling and warehousing agricultural implements and machinery. Foundations will be laid during the winter. The estimated cost is \$120,000.

The Fond du Lac Paper Co., Fond du Lac, Wis., is being organized by Leopold Wimmer to manufacture box board. F. J. Stephens, local architect, is preparing plans for a one-story mill, 100 x 235 ft., which will cost about \$125,000 equipped.

P. J. Fischer, 241 Rusk Avenue, Milwaukee, has let contracts for a one-story brick machine and automobile repair shop, 45 x 120 ft., at Twenty-second and Walnut streets, to cost about \$20,000 with equipment.

The United Wood Products Co., Chippewa Falls, Wis., will build a new factory costing about \$40,000 and will buy a small list of wood-working tools. A. W. Juster is secretary and manager.

The Central South

ST. LOUIS, Nov. 15.

The Power Truck & Tractor Co., Goldsmith and Beard streets, Detroit, is contemplating the erection of a new plant on Mead Street, St. Louis, with frontage on the tracks of the Wabash Railroad, to cost about \$200,000.

The Plantsville Boiler & Machine Works, Plantsville, Ky., recently organized, is planning for the erection of new works.

The Belknap Hardware & Mfg. Co., Second and Washington streets, Louisville, will take bids early in December for a new seven-story and basement building, 190 x 190 ft., at First and Water streets, to cost about \$400,000. Joseph & Joseph, Atherton Building, are architects.

The Newport Culvert Co., Newport, Ky., manufacturer of metal culverts, has increased its capital from \$25,000 to \$150,000. J. B. Andrews is president.

The Wadsworth Electric Mfg. Co., Covington, Ky., manufacturer of electrical products, has increased its capital from \$150,000 to \$500,000. George B. Wadsworth is president.

The Gooch Coal Co., Pineville, Ky., recently organized, is planning for the installation of considerable equipment at its properties in the vicinity of Arjay, Ky., including industrial locomotive, mining cars, etc. C. L. Gooch is vice-president and manager.

The Perfect Bronze Projection Shutter Co., Louisville, has increased its capital from \$20,000 to \$40,000.

The Perfect Steam Sterilizer Co., Louisville, has been incorporated with a capital of \$800,000 by J. C. Darnell, W. E. Crutcher and S. O. Wieland, to manufacture sterling equipment and other metal specialties.

The Landram Coal Co., Pineville, Ky., recently organized, is planning the construction of a new coal tippie at its properties in the Arjay, Ky., district. W. B. Landram is president and manager, and C. F. Wheeler, Harlan, Ky., secretary.

The Vatter Co., Louisville, manufacturer of electrical batteries, etc., has increased its capital from \$20,000 to \$40,000.

The Southern Car Wheel Co., Railway Exchange Building, St. Louis, is considering the erection of a new plant on Marcus Avenue, fronting on the line of the Terminal Railroad, estimated to cost in excess of \$250,000, with machinery.

The A. B. Clippinger & Son Mfg. Co., 1100 South Mill Street, Kansas City, Mo., manufacturer of automobile truck bodies, is planning for the erection of new one-story works, 48 x 130 ft. H. D. Pampel, 404 Finance Building, is architect.

The Grenada Compress Co., Earle, Ark., operating with a capital of \$100,000, is planning the erection of a new cotton compress, with capacity of 10,000 bales, to replace the plant recently destroyed by fire. It is proposed to have it ready for service early next year.

The James & Graham Wagon Co., Jefferson Street, Memphis, Tenn., is planning for a new one-story brick and concrete works, 150 x 200 ft., estimated to cost \$40,000, to replace a building destroyed by fire.

The Gulf States

BIRMINGHAM, Nov. 15.

The Ranger Boiler Works, Ranger, Tex., contemplates the erection of a new plant to cost about \$100,000, including equipment. L. C. McFall is president.

The Dixie Tire & Rubber Association, Dallas, Tex., has been incorporated with a capital of \$500,000 by J. E. Mayo, J. D. Youngblood and R. T. Meadow, Dallas, to manufacture automobile tires and other rubber products.

The Arnold Washing Machine Co., 306 Boger Building, Dallas, Tex., has been organized to operate a plant for the manufacture of steam washing equipment. W. G. Liggett is president, and M. E. Martin, secretary and manager.

The Oil Belt Power Co., Eastland, Tex., is arranging for the operation of its new electric generating plant on the Leon River, about three miles from Eastland, at an early date. It has a capacity of 10,000 hp. and it is proposed to install machinery for increased output later to serve various oil properties in this section. The plant is said to represent an investment of close to \$5,000,000.

J. B. Jamieson, Wichita Falls, Tex., is planning to rebuild his local cotton ginning plant, recently destroyed by fire with loss estimated at about \$25,000.

The Wizard Machine Co., Miami, Fla., has been incorporated with a capital of \$100,000 by W. P. and P. F. O'Keefe and J. H. Bloodgood, to manufacture machinery and parts.

The Duval Corporation, Savannah, Ga., recently incorporated with a capital of \$400,000, has acquired about 65 acres on the waterfront at Jacksonville, Fla., for the establishment of a shipbuilding plant. In addition to general ship-

construction and repairs, it is proposed to erect branch works for car building and repairs. M. A. O'Bryne, Eli Nees and P. H. Haslam head the company.

The People's Gin Co., Wintersville, Miss., is considering the rebuilding of its cotton ginning plant, destroyed by fire Nov. 4, with loss estimated at about \$25,000.

The United States Shipping Board, Washington, has disposed of the former shipyard at Mobile, Ala., operated by Fred T. Ley & Co., 19 West Forty-fourth Street, New York, during the war, to H. A. Stone & Co., Philadelphia, on their recent bid of about \$181,000.

The Biloxi Machine Works, Biloxi, Miss., has increased its capital to \$30,200.

The Chickasaw Shipbuilding & Car Co., Birmingham, proposes to install machinery at its new pressed steel car works, now in course of construction, to allow for an initial capacity of about 20 complete cars per day. The plant is estimated to cost about \$500,000.

The Marine Iron Works, 1012 Magazine Street, New Orleans, has plans under way for a new one-story machine and forge shop, 75 x 115 ft., to cost about \$75,000. A department for boiler work will be installed.

The Continental Gin Co., Birmingham, manufacturer of cotton compresses and other heavy equipment, a Delaware corporation, has increased its capital from \$3,000,000 to \$6,000,000.

The Navy Department, Washington, has acquired land on the east bank of the Pascagoula River, near Pascagoula, Miss., for the extension of the Naval Reservation in this section. Preliminary plans are under way for the establishment of a machine shop, 40 x 100 ft.; forge shop, 40 x 50 ft.; power house, 40 x 80 ft.; with installation of a 3500-ton marine railroad system, as an extension to the present trackage. A shipyard will also be established to include two shipways.

W. A. Chambers, Corpus Christi, Tex., and associates, have purchased a site for an oil refinery to have a daily capacity of 1500 bbl. and to cost \$100,000.

Arnold G. Glass, Birmingham, plans to establish works to manufacture gas ranges. Prices are wanted on equipment.

California

LOS ANGELES, NOV. 8.

The Seibel Air Spring Co., 1204 Humboldt Bank Building, San Francisco, manufacturer of mechanical springs, etc., is arranging for a stock issue of \$200,000 for the construction of a new plant at San Mateo, Cal., where about 40 acres has been acquired. It is said that an architect will be selected at an early date to prepare plans.

The Western Automotive Works, 5349 Santa Monica Boulevard, Los Angeles, has filed notice of organization to manufacture automobile parts and equipment. A. S. Richardson and T. R. Gerberding head the company.

The Atchison, Topeka & Santa Fe Railroad Co., 605 Market Street, San Francisco, is arranging for an expenditure of \$18,000,000 for rolling stock and machinery for pre-cooling plants, engine and car shops, and other mechanical departments.

The Atlas Automobile Works, Los Angeles, is having plans prepared for a new two-story machine and metal-working plant on South Hope Street, 70 x 190 ft. John J. Frauenfelder, 1116 Story Building, is architect.

The Vitrefrax Co., Los Angeles, has been incorporated with a capital of \$500,000 by T. S. Curtis, B. L. Wright, and Charles R. Harris, to manufacture brick and tile products.

The U. S. Plating Works, 1182 South San Pedro Street, Los Angeles, has been organized to manufacture metal products. V. H. Wilson and E. A. Snelson head the company.

The Associated Oil Co., Sharon Building, San Francisco, has completed plans for a new automobile service and machine works at its plant near Webster Street, Alameda, Cal., to cost about \$18,000, to be used for company automobiles and motor trucks.

The Hercules Oil Products Corporation, affiliated with the Hercules Powder Co., Chula Vista, near San Diego, Cal., has awarded contract to the Winter Construction Co., Los Angeles, for two additions to the local plant, 100 x 340 ft. and 90 x 240 ft., for by-products production.

The Jumbo Truck Co. of California, 1201 South Hill Street, Los Angeles, has filed notice of organization to

manufacture motor truck parts, etc. R. W. Potts, 1002 North Figueroa Street, heads the company.

The Tia Juana Lead Works, Tia Juana, Cal., has completed plans for the initial unit of a new plant, estimated to cost about \$100,000, including machinery.

The Union Gas Engine Co., Kennedy Street, Alameda, Cal., has filed plans for the erection of a one-story building at the end of Peach Street.

The California-Mexico Oil & Refining Co., Los Angeles, recently incorporated with a capital of \$1,000,000, is planning for the construction of a new refinery. The company is headed by N. I. Harrington and C. A. Coates, Los Angeles, and J. J. Hastings, Long Beach, Cal.

The Pacific Northwest

SEATTLE, NOV. 8.

The possibility of further price reductions seems to be the deterrent buying feature in this section. Inquiries for equipment have become so scarce as to be almost non-existent.

Victor M. Dafoe, Vancouver, B. C., who has operated a shipbuilding plant in Vancouver for 20 years, contemplates extensions. A building slip and a marine ways will be added and new equipment installed.

The City Council, Bandon, Ore., plans the construction of a municipal power and electric plant at a cost of \$105,000. The works of the Bandon Power Co. will probably be purchased and extensive enlargements made.

The sawmill of Rhodes & Cottoral, Gold Hill, Ore., was completely destroyed by fire recently, with loss of \$80,000. It had a daily capacity of 40,000 ft. and will probably be rebuilt.

The Associated Welding & Brazing Works, Portland, has changed its name to the Associated Welding & Machine Works.

The asphalt melting plant of the Pacific Coast Coal Co., Renton, Wash., was destroyed by fire recently, with loss of \$20,000. It will rebuild immediately.

The Ne Page, McKenny Co., Seattle, electrical contractors and manufacturers, will erect a new two-story plant, 61 x 131 ft., to cost about \$40,000. A foundry, machine shop, etc., will be included.

The Norway Pacific Shipbuilding Co., Everett, Wash., has contracted to build six 12,000-ton tank steamers for Norwegian interests.

Canada

TORONTO, NOV. 13.

The principal feature in the machine-tool market is that regarding prices, which is being generally discussed, and in the past week some reductions have been made. One local dealer states that a large manufacturer of boring mills has reduced prices about 15 per cent and announces that his quotations will not go any lower. Some manufacturers sent out notices a few weeks ago stating that they would allow dealers to deduct 20 per cent from their April lists. Other makers, however, have made no reduction in prices and state that they do not expect to see a decline until production costs are lower. Notwithstanding some reductions in quotations, there appears to be no rush by those needing equipment to place orders, many being of the opinion that a few more weeks' delay may mean a considerable saving. A very fair demand, however, exists for machinery and most dealers are satisfied with the amount of business moving, which is chiefly for single machines. While some big lists have been expected none has so far come forward. Some activity is shown in the demand for small tools. A reduction of 10 per cent is announced in high-speed steel tools and reductions have been made in carbons. Many dealers look for a brisk demand for equipment in the near future, not only for the domestic market, but also for export.

Copies of tender forms and specifications have been received at Ottawa from D. H. Ross, Canadian trade commissioner, Melbourne, Australia, for equipment required by the Victorian Government Railways Department, and by the Postmaster General's Department, Melbourne. Forms and specifications are open at the Department of Trade and Commerce, Ottawa, Ont. (file No. 26137). Tenders in conformity with the specifications should be addressed to the

secretary, Victorian Government Railways, Melbourne, Australia, and to the Deputy Postmaster General, Melbourne, Australia.

The executors of the estate of the late R. Whitelaw, Woodstock, Ont., are offering for sale by tender the foundry, machine shop and boiler plant.

The Holden-Morgan Co., Toronto, is remodeling its plant with a view to specializing in the rebuilding of automobiles. It is the intention to take in motor cars which are more or less in need of repair and rebuild the worn parts.

The Whitman & Barnes plant at St. Catharines, Ont., has been taken over by J. H. Williams & Co., who have plants at Buffalo and Brooklyn. The American plants will serve the United States market and that at St. Catharines will take care of the Canadian and export trades.

The Canadian National Railways, 1 Toronto Street, Toronto, will build a car repair shop at Fort William, Ont., to cost \$25,000. H. A. Dixon, Winnipeg, Man., is chief engineer.

The Stansell Motors, Ltd., Amherstburg, Ont., proposes to start work in the spring on the erection of a plant at London, Ont.

Plans are being prepared for the erection of a machine shop for T. Terry, 150 Maple Street, London, Ont., to cost \$25,000.

The Mann Axe & Tool Co., Ltd., St. Stephen, N. B., has awarded the general contract to the H. K. Ferguson Co., Ltd., Brantford, Ont., for the erection of a factory to cost \$50,000.

Canada Heaters, Ltd., Toronto, Ont., has been incorporated with a capital stock of \$100,000 by Robert E. L. Lott, 371 Roxton Road; Leo J. Phelan, 72 Queen Street West; John L. Cornes, and others, to manufacture stoves, ranges, boilers, hot water heaters, etc.

The Mack Storage Battery Co. of Canada, Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by Geoffrey W. Adams, 632 Bank of Hamilton Building; Percy E. F. Smily, 10 Oriole Gardens; James A. Mason and others, all of Toronto, to manufacture electrical appliances.

The St. Mary's Wood Specialty Co., Ltd., St. Mary's, Ont., is in the market for a double spindle shaper, with guide stand countershaft.

The Bell Thread Co., Ltd., Hamilton, Ont., is in the market for a 25 to 30-hp. two-phase, 60-cycle, 220-volt motor, complete with starter and base.

Keenan Bros., Ltd., Owen Sound, Ont., is in the market for a standard engine lathe, 8 or 10 ft. long, 16-in. swing or over.

Beatty Brothers, London, Ont., are preparing to start work on the erection of a three-story machine shop in Chelsea Green to employ about 500.

Adanac Products, Ltd., Toronto, has been incorporated with a capital stock of \$300,000 by Wilfrid W. Parry, 60 Victoria Street; Horace B. Proudlove, James W. Butters and others to manufacture paper balers, automobile heaters, machinery, etc.

The Canadian Hoffman Machinery Co., Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by Sydney E. Wedd, 18 Elm Grove Avenue; Roy B. Whitehead, 85 Bay Street; Bruce V. McCrimmon and others to manufacture pressing, laundry and other machinery.

The C. H. Epps Mfg. Co., Ltd., Goderich, Ont., has been incorporated with a capital stock of \$40,000 by Clifford H. Epps, Varna, Ont.; George S. Young, 40 Pauline Avenue; Harry Everatt, both of Toronto, and others to manufacture automobile and tractor engines, semi-Diesel, marine, stationary and other engines, etc.

OFFICE CHANGES

The Miner & Peck Mfg. Co., New Haven, Conn., has changed its address to Derby, Conn.

The G. C. Goode Co., an Ohio corporation handling the sales in Michigan and Ohio for Edgar Allen steels, Davidsonized cutters and Lincoln Twist Drill Co. products, has opened a Detroit office and warehouse in the Garfield Building. The office is in charge of E. L. Russell, vice-president, and E. D. Stirrine, sales manager, both of whom were with the Timken-Detroit Axle Co. for several years.

V. Harperink, exporter and importer, New York, announces the opening of an office at 6 Church Street, where he will carry on a general export and import business, principally in metals, machinery and engineering supplies. By special arrangement all material exported to N. V. Soerabayasche Maschinenhandel, v/h Becker & Co. of Holland and the Dutch East Indies will be handled through this office. This account was formerly handled by Charles A. Anderson & Co., 395 Broadway, New York.

IRON AND INDUSTRIAL STOCKS

New Low Records for 1920 Made During Week on Increased Selling

Market values of the leading industrial stocks have established new low records for 1920 during the past week on an increased volume of selling. In many instances such securities recently have sold at prices 50 to 65 per cent below those quoted a year ago. To all intents and purposes the decline in the stock market has been largely based on the continued liquidation of commodities and the scarcity of available money, although in special instances other influences have had a bearing on values.

For instance, the decline in General Electric generally is ascribed to new financing by that company through a large stock issue. United States Steel common is cheaper than it has been before since 1917. The market value of Midvale's shares is more than \$20,000,000 less than its \$90,000,000 working capital. The shrinkage in other steel securities is equally pronounced. It can hardly be said that the threat to unbite the steel industry has been a stock market factor. Further cuts in tire prices have caused uneasiness among some holders of automobile shares.

The range of prices on active iron and industrial stocks from Saturday of last week to Monday of this week was as follows:

Allis-Chal. com...	28 1/2 - 32 3/4	Midvale Steel ...	34 1/2 - 37 1/4
Allis-Chal. pf....	70 3/4 - 72 3/4	Nat-Acme	30 - 33
Am. Can. com....	25 1/4 - 29 1/2	Nat. E. & S. com.	46 - 54 3/4
Am. Can. pf....	84 1/2 - 86	Nat. E. & S. pf..	90 - 90
Am. C. & F. com.	125 - 132 3/4	N. Y. Air Brake.	78 - 93 3/4
Am. C. & F. pf..	108 - 109	Nova Scotia Stl.	36 - 38
Am. Loco. com...	85 3/4 - 93 1/4	Press. Steel com.	86 - 94 1/4
Am. Loco. pf....	101 - 102 1/4	Press. Steel pf...	98 - 98
Am. Stl. F. com.	31 1/2 - 36	Ry. Stl. Spg. com.	86 - 94 1/4
Am. Stl. F. pf...	83 - 85 1/4	Ry. Stl. Spg. pf.	104 - 105
Bald. Loco. com.	100 - 108 3/4	Replogie Steel...	69 1/2 - 79 1/2
Bald. Loco. pf...	98 1/2 - 99	Republic com...	66 1/2 - 73 3/4
Beth. Stl. com...	57 1/2 - 63	Republic pf.....	93 - 93
Beth. Stl. Cl. B.	58 1/2 - 65 1/2	Sloss com.....	55 - 58
Beth. Stl. 8% pf.	103 1/2 - 104 1/2	Superior Steel...	41 1/4 - 49 1/2
Chic. Pneu. Tool.	78 1/2 - 75	Sup. Stl. 1st pf...	97 1/2 - 97 1/2
Col. Fuel.....	30 - 31 1/4	Transue-Will...	41 1/4 - 43
Cru. Steel, com.	103 - 115 1/2	Un. Alloy Steel...	32 - 34 1/4
Cru. Steel pf....	89 3/4 - 90	U. S. Pipe com...	11 1/2 - 12 1/4
Gen. Electric...	120 - 138	U. S. Pipe pf...	40 1/4 - 42
Gt. No. Ore cert.	30 1/4 - 33 3/4	U. S. Steel com...	81 3/4 - 85 3/4
Gulf States Stl...	39 - 42 1/2	U. S. Steel pf...	105 3/4 - 106 1/4
Int. Har. com...	95 - 104	Vanadium Steel...	45 - 50 1/2
Int. Har. pf....	95 - 104 1/4	Va. I. C. & Coke.	95 - 105
Lackwanna Stl...	56 - 61 1/4	Westingh. Elec...	43 1/2 - 46 3/4
Lake Sup. Corp.	9 3/4 - 10 3/4		

Annual Report of the Crucible Steel Co.

Gross profits of the Crucible Steel Co. of America and its subsidiaries for the fiscal year ended Aug. 31 were \$17,274,489. After deductions amounting to \$5,494,468, which included \$3,775,291 for depreciation and renewals, \$312,333 for interest on bonds of the subsidiary companies, \$1,230,176 for inventory adjustments, and \$176,669 the loss on sale of bonds, there was a balance or net profit of \$11,780,021.

In his statement to stockholders Horace S. Wilkinson, chairman board of directors, described the year through which the company passed as a very trying one on account of the many difficulties which had to be met in its manufacturing and operating departments as a result of the strikes, not only in the steel industry, but on the railroads, in coal mines, and various other industries producing commodities used by the company. These conditions made for reduced production and excessive costs. A new blast furnace has been completed and a by-product coke oven plant is practically finished and is expected to be in operation during the present month. These improvements, together with those made along the Ohio River at the Midland, Pa., works of the company, and extensions to various plants which are practically finished, necessitated the expenditure during the year of \$9,300,000. It is expected that this investment, as well as that previously spent, will increase production and make possible lower operating costs.

The company has been purchasing about one-third of its pig iron requirements at market price. It will not be able, with the new blast furnace, to produce its entire requirements. It previously purchased its coke and has been obliged during the year to pay at times the highest market price. With the new by-product coke ovens now practically completed, it will be able to produce its entire requirements of coke. Because of inadequate unloading facilities on the river at the Midland plant, it has been depending largely upon railroad transportation to furnish the plant with its fuel and coking coal, but with the completion recently of its new unloading facilities, it is now equipped to handle a sufficient quantity of coal from its own mines to furnish the plant with its fuel and coking coal, without depending upon the railroad transportation to meet this demand.

The company has met all the requirements of the Gov-

ernment in Federal income tax matters; and all taxes, including back taxes which were under controversy, have been ascertained and paid in full. Since making the last annual report, the company has paid \$12,766,114 for taxes, this sum including the amount of unpaid back taxes in dispute and the taxes from Aug. 31, 1918, to Aug. 31, 1919. It has been somewhat difficult to meet this amount in addition to the building program, and has necessarily required the greatest economies possible and the conservation of all earnings to meet these demands.

The unfilled orders of the company for the product of its tool steel mills were and are as follows: Aug. 31, 1919, 68,379 tons; Nov. 30, 1919, 69,803 tons; Feb. 29, 1920, 84,228 tons; May 31, 1920, 77,682 tons; Aug. 31, 1920, 74,960 tons.

Standard Parts Co. Reorganization

The plan for the reorganization of the Standard Parts Co., Cleveland, as worked out by a committee under the supervision of Federal Judge D. C. Westenhalter, was ratified at a meeting of the stockholders Nov. 10. The only step that now remains before placing the plan in effect is the securing from stockholders subscriptions to the requisite amount of the Class "A" preferred stock. About one-third of the necessary amount already has been subscribed. It is expected that additional subscriptions in sufficient amounts will be subscribed in time to take the company out of the hands of the receivers by Dec. 1.

The reorganization committee recommended a new board of 15 directors and the selection was approved by the stockholders. The new directorate will include J. O. Eaton, president Standard Parts Co.; F. F. Prentiss, first vice-president Cleveland Twist Drill Co.; Frank A. Scott, vice-president and general manager the Warner & Swasey Co.; Walter D. Sayle, president Cleveland Punch & Shear Works Co.; Franklin G. Smith, president Osborn Mfg. Co.; A. W. Henn, president and treasurer the National Acme Co.; E. J. Hess, vice-president Standard Parts Co.; F. R. White, treasurer the Baker R & L Co.; W. E. Bock, chairman of the board of the Bock Bearing Co., Toledo, and several Cleveland bankers and attorneys.

Under the reorganization plan, the company will operate the Standard Welding, Perfection Spring and the Eaton Axle plants in Cleveland, Bock Bearing plant in Toledo, and will sell the remainder of its plants. The latter include the company's spring and axle plant in Canton. The spring plant has been dismantled and much of the machinery shipped to Cleveland.

Midvale Steel Earnings

The earnings statement of the Midvale Steel & Ordnance Co. for the three months ended Sept. 30 last showed a comparatively small increase in the amount earned on the corporation's capitalization as compared with that for the previous three months, but when contrasted with figures for the quarter ended Sept. 30, 1919, the showing is more significant. For the third quarter of this year, there was a net profit after Federal taxes and all other charges of \$1,448,079, which is equal to \$2.22 a share on the \$100,000,000 outstanding stock. For the preceding quarter the net profit was \$4,349,498, or \$2.17 a share, while in the corresponding quarter last year the profit was \$3,408,359, or \$1.70 a share.

Net earnings of the company for the nine months ended Sept. 30 last were \$17,146,523, or \$3,454,769 larger than those for the corresponding period last year. Interest charges amounted to \$2,311,403, or \$50,924 less than those last year, while depreciation, etc., increased \$295,942 to \$4,520,546, leaving a net profit of \$10,314,574, against one of \$7,104,823 last year, an increase of \$3,209,751. This net profit, after allowing for all charges including taxes, amounts to \$5.15 a share. For the same period last year, the company earned \$2.55 a share.

Industrial Finances

Net sales of the National Conduit & Cable Co. for the nine months ended Sept. 30 last amounted to \$11,116,889, or \$4,039,843 larger than those for the corresponding period last year, but manufacturing costs and expenses increased approximately \$3,394,000 to \$10,977,219, consequently the company's earning statement shows, after certain charges, a deficit of \$289,323, against one of \$859,188 last year.

The Studebaker Corporation and its subsidiary companies for the nine months ended Sept. 30 last report net profits after interest and Federal taxes of \$9,765,851, which are equivalent, after allowing for the preferred stock dividends, to \$15.38 a share earned on the \$60,000,000 common stock. During the first nine months of 1919, the company earned \$21.53 on \$30,000,000 common stock.

A public offering of \$3,500,000 8 per cent 10-year sinking fund notes dated Nov. 1 of the Hydraulic Steel Co., Cleveland, is made.

Stockholders of Landers, Frary & Clark, New Britain, Conn., cutlery, etc., have authorized an increase from \$6,000,000 to \$7,000,000 in the capitalization by an issue of 40,000 common shares, par \$25.

The Stanley Steel Welded Wheel Co., Boston, is offering for public subscription an issue of preferred stock with a common stock bonus, to provide funds to finance the construction and equipment of a plant at North Tonawanda, N. Y., and to provide working capital.

The Stanhope Forge & Machine Works, Cambridge, Mass., has increased its capitalization from 2000 shares, par \$5, to 10,000 shares, same par value. Part of the new issue is to be sold to provide working capital, part for lease rights on the property occupied, and part for the acquisition of the Lansdowne Garage, Cambridge. Frank D. Scott is president and Horace B. Coleman, treasurer.

In its suit to foreclose a mortgage given by the Aetna Iron & Steel Corporation and C. E. Wirt, the Aetna Explosives Co. of New York has been given a judgment of \$323,500, plus attorney's fees, in the circuit court at Crown Point, Ind. The Aetna Iron & Steel Corporation was organized to construct a sheet mill and had purchased holdings of the explosives company near Gary, Ind. The erection of the mill, however, failed to materialize.

William H. Moore, Jr., has been appointed receiver for Collins & Webb, Inc., 447 East Third Street, Los Angeles, machinery and parts. The assets are said to total \$174,826.47, and the liabilities \$162,121.47.

The Hill & Griffith Co., Cincinnati, dealer in foundry supplies, has increased its capitalization from \$150,000 to \$200,000. The company is enlarging its property in the West End of the city.

Stockholders of the Sharon Pressed Steel Co., Sharon, Pa., have approved an increase in the company's indebtedness from \$500,000 to \$2,000,000. The company owns a modern plant at Wheatland, Pa.

The American Steel Foundries earned \$4,276,889 after charges and Federal taxes for the nine months, ended Sept. 30, equivalent to \$7.01 per share on the common stock, contrasted to \$3.91 per share for the corresponding period last year.

The Standard Plunger Elevator Co., Worcester, Mass., has been petitioned into bankruptcy. According to counsel it has \$100,000 liabilities and assets of normally the same amount, consisting largely of stock on hand, equipment, etc. The company has a capital of \$750,000 and has a Massachusetts charter. Since the war the company has virtually abandoned the manufacture of elevators, devoting itself to repairing them and to building planers from patents controlled by the Powell Machine Co., Worcester, which is not affected by the bankruptcy proceedings.

The Atlas Tack Co., Fairhaven plant, Fairhaven, Mass., in September, shipped 1,023,517 lb. of product. Sales for that month were \$313,895, compared with \$193,287 in the corresponding months last year, an increase of 62 per cent.

By the will of the late Joseph R. Torrey, treasurer, J. R. Torrey Razor Co., Worcester, Mass., his son, Lewis H., receives all his father's interests in that concern.

The Sharon Pressed Steel Co., Sharon, Pa., has completed its new financing program through an increase of its indebtedness from \$500,000 to \$2,000,000, the increase to consist of \$1,500,000 of five-year gold notes. The management of the company has had an offer to buy its Ellwood City works from William McIntyre and C. J. Strasbaugh.

American Rolling Mill Co. stock dividend of 5 per cent on the common stock, payable Feb. 1, to stockholders of record Dec. 31; also a 25 per cent stock dividend on Nov. 15, stockholders of record Nov. 1.

The report of the Otis Steel Co. for the third 1920 quarter shows net earnings before Federal taxes of \$1,334,667, compared with \$1,324,558 in the June quarter and \$1,089,118 in the first quarter of the year.

A special stockholders' meeting of the Skinner Chuck Co., New Britain, Conn., will be called at an early date for the purpose of authorizing an increase in the company's capitalization from \$225,000 to \$750,000, part of which, if sanctioned, will be issued as a 100 per cent stock dividend. The remainder will be held in reserve.

General Electric Co. stockholders of record Dec. 8 will have the right to subscribe to the \$28,000,000 new stock at par in the ratio of one new share for each five held. Subscriptions must be made on or before Jan. 20, next. Payment can be made in four instalments, Jan. 20, April 20, July 20 and Oct. 20, 1921, or in full at time of subscription.

Federal Judge Charles A. Witmer has appointed A. Bruce Hartman, Bloomsburg, Pa., manufacturer, as receiver for the Bell Locomotive Works of Bloomsburg, Pa., a concern that builds narrow gage locomotives. The receiver will operate the property, it is understood.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined iron, base price	5.00c.
Swedish bars, base price	20.00c.

Soft Steel:

¾ to 1½ in., round and square	3.48c. to 4.50c.
1 to 6 in. x ¾ to 1 in.	3.48c. to 4.50c.
1 to 6 in. x ¼ to 5/16 in.	3.58c. to 4.50c.
Rods—¾ and 11/16 in.	3.53c. to 5.45c.
Bands—1½ to 6 by 3/16 to No. 8.	4.18c. to 5.50c.
Hoops	5.68c. to 6.00c.

Shapes:

Beams and channels—3 to 15 in.	3.58c. to 4.15c.
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Angles:

3 in. x ¼ in. and larger.	3.58c. to 4.15c.
3 in. x 3/16 in. and ½ in.	3.83c. to 4.95c.
1½ to 2½ in. x ¼ in.	3.63c. to 4.75c.
1½ to 2¾ in. x 3/16 in. and thicker.	3.58c. to 4.70c.
1 to 1¼ in. x 3/16 in.	3.63c. to 4.75c.
1 to 1¼ in. x ½ in.	3.68c. to 4.80c.
¾ x ¾ x ½ in.	3.73c. to 4.85c.
¾ x ½ in.	3.78c. to 4.90c.
¾ x ¾ in.	4.18c. to 5.80c.
½ x 3/32 in.	5.28c. to 7.50c.

Tees:

1 x ½ in.	3.98c. to 5.75c.
1¼ in. x 1¼ x 3/16 in.	3.88c. to 5.65c.
1½ to 2½ x 3/16 in. and thicker.	3.68c. to 5.45c.
3 in. and larger	3.63c. to 5.15c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.	4.15c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ...	4.65c.
Toe calk, ½ x ¾ in. and larger.	6.00c.
Cold-rolled strip (soft and quarter hard) ..	12c. to 14c.
Open-hearth spring steel.	7.00c. to 10.00c.
Shafting and Screw Stock:	
Rounds	6.25c. to 7.00c.
Squares, flats and hex.	6.75c. to 7.50c.
Standard cast steel, base price.	15.00c.
Best cast steel.	20.00c. to 24.00c.
Extra best cast steel.	25.00c. to 30.00c.

Tank Plates—Steel

¼ in. and heavier.	3.78c. to 4.15c.
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Sheets

	Per Lb.
<i>Blue Annealed</i>	
No. 10	6.15c. to 7.25c.
No. 12	6.20c. to 7.30c.
No. 14	6.25c. to 7.35c.
No. 16	6.35c. to 7.45c.

Box Annealed—Black

	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
Nos. 18 to 20	7.90c. to 8.80c.
Nos. 22 and 24	7.95c. to 8.85c.	10.80c.
No. 26	8.00c. to 8.90c.	10.85c.
No. 28	8.10c. to 9.00c.	11.00c.
No. 30	8.20c. to 9.25c.
No. 28, 36 in. wide, 10c. higher.		

Galvanized

	Per Lb.
No. 14	8.60c. to 9.60c.
No. 16	8.85c. to 9.75c.
Nos. 18 and 20	9.00c. to 9.90c.
Nos. 22 and 24	9.15c. to 10.05c.
No. 26	9.30c. to 10.20c.
No. 27	9.45c. to 10.35c.
No. 28	9.60c. to 10.50c.
No. 30	10.10c. to 11.00c.
No. 28, 36 in. wide, 20c. higher.	

Pipe

	Standard—Steel		Wrought Iron
	Blk. Galv.		Blk. Galv.
½ in. Butt.	—34 —17	¾-1½ in. Butt. —	3 +17
¾-3 in. Butt.	—38 —22	2 in. Lap.	+ 3 +21
¾-6 in. Lap.	—33 —18	2½-6 in. Lap. ..	+ 1 +17
7-12 in. Lap.	—23 — 6	7-12 in. Lap. ...	+12 +30

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Steel Wire

	Per Lb.
Bright basic	8.00c.
Annealed soft	8.00c.
Galvanized annealed	8.75c.
Coppered basic	8.50c.
Tinned soft Bessemer	10.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

	Per Lb.
High brass sheet	25¼c. to 26c.
High brass wire	26¼c. to 27c.
Brass rod	23¼c. to 25c.
Brass tube	41¼c. to 43c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 26½c. to 27½c. per lb. base.	
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.	

Tin Plates

Bright Tin	Grade	Grade	Coke—14x20	Primes	Wasters
	"AAA"	"A"	80 lb.	\$10.80	\$10.55
	Charcoal	Charcoal	90 lb.	10.90	10.65
	14x20	14x20	100 lb.	11.00	10.75
IC.	\$16.50	\$14.25	IC.	11.25	11.00
IX.	18.75	16.25	IX.	12.25	12.00
IXX.	20.50	18.00	IXX.	13.25	13.00
IXXX.	22.25	19.75	IXXX.	14.25	14.00
IXXXX.	23.75	21.50	IXXXX.	15.25	15.00

Terne Plates

	Per Lb.
8-lb. Coating 14 x 20	
100 lb.	\$ 9.35
IC	9.50
IX	10.50
Fire door stock.	12.75

Tin

Straits pig	43c.
Bar	50c. to 55c.

Copper

Lake ingot	18c.
Electrolytic	17¼c.
Casting	17½c.

Spelter and Sheet Zinc

Western spelter	8¾c. to 9c.
Sheet zinc, No. 9 base, casks.	14c. open 14½c.

Lead and Solder*

American pig lead	8c. to 8¾c.
Bar lead	9c. to 10c.
Solder, ½ and ½ guaranteed.	30c.
No. 1 solder	27½c.
Refined solder	23¼c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	90c.
Commercial grade, per lb.	50c.

Antimony

Asiatic	8½c. to 9½c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	35c. to 38c.
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Old Metals

The market has settled down to a quiet sluggish state, business being practically impossible because of the uncertainty of the future. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.	12.50
Copper, heavy and wire.	11.50
Copper, light and bottoms.	10.25
Brass, heavy	7.25
Brass, light	5.50
Heavy machine composition.	12.25
No. 1 yellow brass turnings	6.75
No. 1 red brass or composition turnings	10.00
Lead, heavy	5.25
Lead, tea	3.75
Zinc	4.00

